

Draft Statement of Work  
For Multi-purpose Reconfigurable Training System (MRTS)

1. SCOPE

This statement of work (SOW) defines the effort required to provide Naval Air Warfare Center, Training Systems Division (NAWCTSD), with development and sustainment of training solutions using the Multi-purpose Reconfigurable Training System (MRTS). This will be an Indefinite Delivery-Indefinite Quantity (IDIQ) Contract. The MRTS effort consists primarily of end item deliverables including: media, test and evaluation products, technical documentation, life cycle support products, workstation simulation products, and MRTS software products consisting of re-used and expanded code, libraries, and data. Delivery orders (DOs) may be issued to develop and field new training solutions emulating other military systems. Individual DOs may include limited hardware procurement and integration of hardware with MRTS software, life cycle support activities, and data collection and analysis activities to directly support product development. Current MRTS products simulate tactical systems found on submarines of the U.S. Navy. DOs of this contract may include products for the U.S. and foreign armed services and any other customer of NAWCTSD.

1.1 Background

The MRTS uses primarily Commercial Off the Shelf (COTS) hardware and Windows operating systems to emulate various Naval tactical systems for training purposes. A MRTS device has up to 21 equipment racks and five laptops networked together, with each equipment rack having one or more CPUs and several touch screen monitors. The computers are linked together in a stand-alone Local Area Network (LAN) that runs government-owned simulation software. There are four types of training devices installed at seven training sites:

1. Naval Submarine School, Groton, CT
  - a. Device 21E17 - WLCTT
  - b. Device 21H42 – SCSS
  - c. Device 21H44 – CSRR Operator
  - d. Device 21H45 – CSRR Maintenance
2. Naval Submarine Training Center, Pacific, Pearl Harbor, HI
  - a. Device 21E17 - WLCTT
  - b. Device 21H42 – SCSS
3. TRIDENT Training Facility (TTF), Bangor, WA
  - a. Device 21H44 – CSRR Operator
  - b. Device 21H45 – CSRR Maintenance
4. TTF Kings Bay, GA
  - a. Device 21H44 – CSRR Operator
  - b. Device 21H45 – CSRR Maintenance
5. Submarine Learning Facility, Norfolk, VA
  - a. Device 21H42 – SCSS
6. Submarine Learning Center Detachment, San Diego, CA
  - a. Device 21H42 – SCSS
7. Naval Submarine Training Center Pacific Detachment, Guam
  - a. Device 21H42 – SCSS

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Operation and maintenance of the above fielded trainers is not a requirement under this SOW and is being provided via other contract vehicles.

All devices consist of commercially available computer systems, networks and peripherals. Each training device can run a variety of software applications. The devices are generally named after the first software application that was delivered on that device, but each device can run several of the applications. For example, the CSRR Operator trainer, Device 21H44, is fully capable of running the SCSS software.

The MRTS family of software applications simulate the following submarine tactical systems:

1. Submarine Communications Support System (SCSS)
2. Common Submarine Radio Room (CSRR) Operator
  - a. Increment 1 Version 1 (SSBN)
  - b. Increment 1 Version 1 (SSN Virginia Class)
  - c. Increment 1 Version 2 (SSGN)
  - d. Increment 1 Version 3 (SSN Los Angeles class)
  - e. Increment 1 Version 3 (SSN Virginia Class)
  - f. Increment 1 Version 3 (SSBN)
3. CSSR Maintenance
  - a. Increment 1 Version 1 (SSBN)
  - b. Increment 1 Version 2 (SSGN)
  - c. Increment 1 Version 3 (SSN Los Angeles class)
  - d. Increment 1 Version 3 (SSN Virginia Class)
4. Weapons Launch Console Team Trainer (WLCTT)
5. Digital Modular Radio (DMR) Classroom Software – A subset of the CSRR build designed for classroom training.
6. BLQ-10 – A derivative of the MRTS maintenance capabilities baseline providing BLQ-10 maintenance training.

## 1.2 Method of Tasking

Government requirements issued under the basic IDIQ Contract will be met through individual DOs with a DO SOW containing the requirements for specific tasks relating to training system products. DOs may be issued at any time during contract performance, and will be related to scope tasks outlined in the basic SOW. Additionally, the Government will include a set of data item requirements for the DO in the form of CDRL items.

## 1.3 Definitions

The following definitions apply to this SOW.

### 1.3.1 Engineering Production Model (EPM)

An EPM is a standalone training system built to match the requirements of a MRTS Device 21H45. An EPM may be used for testing purposes during the course of the execution of the terms of a delivery order.

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1.3.2 MRTS Integration Laboratory (MIL)

The MIL is used by the government to accept products developed as the result of a delivery order. Access to the MIL will be granted to test on the EPMs as well as perform the core sustainment functions. The MIL consists of:

- a. Two EPMs
- b. Fifteen workstations for Government employees
- c. Servers for configuration management of the MRTS software and data repositories
- d. Storage space for accountable inventories
- e. Up to two workspaces, without computers, available to the contractor.

2. APPLICABLE DOCUMENTS

The following documents of the issue listed form a part of this SOW to the extent specified herein. In the event of a conflict between documents referenced herein and the contents of this SOW, the contents of this SOW take precedence. Nothing in this SOW, however, supersedes applicable laws and regulations, unless a specific exemption has been obtained.

2.1 Government Documents

SPECIFICATIONS:

Naval Air Warfare Center Training Systems Division (NAWCTSD)

- |                |   |
|----------------|---|
| NAWCTSD P-8651 | - Device 21H42 SCSS Systems Interface Manual (SIM)          |
| NAWCTSD P-8653 | - Device 21H42 SCSS Training System Support Document (TSSD) |
| NAWCTSD P-8883 | - Device 21H44 CSRR SIM                                     |
| NAWCTSD P-8884 | - Device 21H44 CSRR TSSD                                    |
| NAWCTSD P-9059 | - Device 21H45 CSRR SIM                                     |
| NAWCTSD P-9060 | - Device 21H45 CSRR TSSD                                    |

OTHER PUBLICATIONS:

Code of Federal Regulations (CFR)

- |                         |  |
|-------------------------|--|
| 22 CFR, Parts 120 - 130 | - Foreign Relations, Chapter I - Department of State, Subchapter M - International Traffic in Arms Regulations |
|-------------------------|--|

(The above regulations are available at [http://www.pmddtc.state.gov/regulations\\_laws/itar\\_official.html](http://www.pmddtc.state.gov/regulations_laws/itar_official.html))

- |                 |  |
|-----------------|--|
| 29 CFR 1910.147 | - The control of hazardous energy (lockout/tagout) |
|-----------------|--|

(OSHA standards are downloadable from <http://www.osha.gov>)

Defense Federal Acquisition Regulations Supplement (DFARS)

- |                    |  |
|--------------------|--|
| DFARS 252.211-7003 | - Item Identification and Valuation (Aug 2008)                           |
| DFARS 252.239-7001 | - Information Assurance Contractor Training and Certification (Jan 2008) |

(DFARS Clauses are downloadable from <http://farsite.hill.af.mil/vfdara.htm>)

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Department of Defense (DoD) Handbooks

- MIL-HDBK-217F, Notice 2 - Reliability Prediction of Electronic Equipment
- MIL-HDBK-472, Notice 1 - Maintainability Prediction
- MIL-HDBK-881A - Work Breakdown Structures for Defense Materiel Items

(Copies of the above handbooks are available at [http://assistdocs.com/search/search\\_basic.cfm](http://assistdocs.com/search/search_basic.cfm) or from the Standardization Document Order Desk, 700 Robbins Ave., Bldg 4D, Philadelphia, PA 19111-5094.)

DoD and Department of the Navy (DoN) Security and Information Assurance (IA)  
Instructions, Manuals, Policy Memos, and Guidance Documents

- DODI 8500.2 - Information Assurance (IA) Implementation dated 6 Feb 2003
- DoD 5220.22-M - National Industrial Security Program Operating Manual, dated 28 Feb 2006
- DODI 8510.01 - DoD Information Assurance Certification and Accreditation Process (DIACAP), dated 28 Nov 2007
- DON DIACAP Handbook (Unnumbered) - DoN DoD Information Assurance Certification And Accreditation Process (DIACAP) Handbook series , dated 15 Jul 2008
- Unnumbered document - DON Platform IT Information Assurance Guidance
- DON CIO Memo 02-10 - DON CIO Information Assurance Policy Update for Platform IT, 26 April 2012
- Unnumbered document - Platform Information Technology Definitions

The above IA documents are available at <http://nawctsd.navair.navy.mil/Resources/Library/IA/Index.cfm>.  
The NISPOM is available at <http://www.dtic.mil/whs/directives/corres/pub1.html>

Federal Acquisition Regulations (FAR)

- FAR 52.204-9 - Personal Identity Verification of Contractor Personnel
  - FAR 52.222-54 - Employment Eligibility Verification
- (FAR Clauses are downloadable from <http://farsite.hill.af.mil/vffara.htm>)

NAVAIR Instructions

- NAVAIRINST 4355.19D Systems Engineering Technical Reviews, dated 17 April 2009

(NAVAIR Instructions are downloadable from <https://homepages.navair.navy.mil/directives/index.cfm>)

NAWCTSD

- TEMP 12XXXX - (Title for the Trainer Test and Evaluation Master Plan (TEMP) associated with the training system), dated \_\_\_\_\_

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United States (US) Code

Title 10, Section 2451 - 2456 - Defense Standardization Program

(U.S Code is downloadable from <http://uscode.house.gov/search/criteria.shtml>)

US Office of Personnel Management (OPM)

OPM Memorandum - Final Credentialing Standards for Issuing Personal Identity  
Verification Cards under HSPD-12, dated 31 July 2008

(The above document is downloadable from

[http://www.opm.gov/investigate/resources/final\\_credentialing\\_standards.pdf](http://www.opm.gov/investigate/resources/final_credentialing_standards.pdf))

2.2 Non-Government Documents

INDUSTRY STANDARDS

American National Standards Institute (ANSI)/American Society for Quality (ASQ)

ANSI/ASQ Q9000-2005 - Quality Management Systems - Fundamentals and  
Vocabulary

ANSI/ASQ Q9001-2008 - Quality Management Systems - Requirements

ANSI/ASQ Q9004-2009 - Quality Management Systems - Guidelines for  
Performance Improvements

(Copies of the above documents are available from [www.ansi.org](http://www.ansi.org) or Global Engineering Documents, 15  
Inverness Way, East Englewood, CO 80112.)

ANSI/Electronic Industries Alliance (EIA)

ANSI/EIA-649-B 2011 - Configuration Management Standard

ANSI/EIA-748-B - Earned Value Management System

(Copies of the above document are available from [www.ansi.org](http://www.ansi.org) or Global Engineering Documents, 15  
Inverness Way, East Englewood, CO 80112.)

ANSI/Institute of Electrical and Electronics Engineers (IEEE)

ANSI/IEEE Std 1008-1987 - IEEE Standard for Software Unit Testing

IEEE Std 1233-1998 Edition (R2002) - IEEE Guide for Developing System Requirements  
Specifications

IEEE/EIA 12207.1-1997 - Standard for Information Technology – Software Life  
Cycle Process – Life Cycle Data

IEEE Std 12207-2008, 2<sup>nd</sup> Edition - Systems and Software Engineering – Software life cycle  
processes

IEEE Std 15288-2008, 2<sup>nd</sup> Edition - Systems and Software Engineering – System Life Cycle  
Process

IEEE Std 15939-2008 - Adoption of ISO/IEC 15939:2007 - Systems and  
Software Engineering - Measurement Process

(Copies of this document are available from [www.ieee.org](http://www.ieee.org) or IEEE Service Center, 445 Hoes Lane,  
Piscataway, NJ 08854-1331.)

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International Organization for Standardization/International Electro-technical Commission  
(ISO/IEC)

ISO/IEC 27002:2005

- Information technology - Security techniques - Code of  
practice for information security management  
(Redesignation of ISO/IEC 17799:2005)

(Copies of this document are available from <http://www.ansi.org>)

### 3. REQUIREMENTS

#### 3.1 General

The requirements defined herein form the basis for all work and products delivered to the Government as a part of the contract. This SOW defines the scope of the projects which apply to the contract. The Contractor shall organize, coordinate, and control all program activities under contract to ensure compliance with the contract requirements and delivery of the required products and incidental services. The Government shall retain unlimited rights to all data pertaining to the software design, component specifications, and resultant products; and government purpose rights for hardware design, component specifications and resultant products, developed under this contract.

##### 3.1.1 Contractor's Progress, Status, and Management Report (CPSMR)

The contractor shall prepare the Contractor's Progress, Status, and Management Report in accordance with (IAW) the Contract Data Requirements List (CDRL B001) for all open delivery orders. For administrative efficiency, the contractor may consolidate CPSMRs into a single report with subsections describing status of individual delivery orders.

##### 3.1.1.1 Program Planning

The purpose of the program planning process is to produce and communicate effective and workable program plans. The contractor shall define, document, manage, and apply program planning processes. IEEE Std 12207-2008, sections 6.1.2.3.4.5, 6.3.1, and 7.1.1.3.1 are recommended. The contractor shall prepare and submit the System Engineering Management Plan (SEMP) IAW CDRL A00D. The contractor shall prepare and submit the Software Development Plan (SDP) IAW CDRL A003.

##### 3.1.1.1.1 Life Cycle Model Management

The purpose of the life cycle model management process is to define, maintain, and assure availability of policies, life cycle processes, life cycle models, and procedures for use by the program. The contractor shall define, document, manage, and apply life cycle model management, at the program level, IAW IEEE Std 12207-2008, section 6.2.1. References to the organizational implementation of life cycle model management within IEEE Std 12207-2008, section 6.2.1 shall only apply to the program.

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3.1.1.1.2 Infrastructure Management

The purpose of the infrastructure management process is to provide the enabling infrastructure and services to the program and program objectives throughout the life cycle. The contractor shall define, document, manage, and apply infrastructure management, at the program level, IAW IEEE Std 12207-2008, section 6.2.2. References to the organizational implementation of infrastructure management within IEEE Std 12207-2008, section 6.2.2 shall apply only to the program.

3.1.1.1.3 Program Assessment and Control

The purpose of the program assessment and control process is to determine the status of the program and direct program plan execution. The contractor shall define, document, manage, and apply program assessment and control IAW IEEE Std 12207-2008, section 6.3.2.

3.1.1.1.4 Program Decision Management

The purpose of the decision management process is to select the most beneficial course of program action where alternatives exist. The contractor shall define, document, manage, and apply a program decision management process IAW IEEE Std 12207-2008, section 6.3.3.

3.1.1.1.5 Development of a Contract Work Breakdown Structure (CWBS)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall develop, document, maintain, and apply a CWBS and CWBS dictionary that define the work structures required to perform the work required by the contract. The contractor shall use the CWBS as the framework for contract planning, budgeting, and reporting of cost, schedule, and performance. The contractor shall use MIL-HDBK-881A for guidance in CWBS and CWBS dictionary definition. A baseline program WBS and associated WBS dictionary are provided as attachments to the contract. The contractor shall extend the CWBS to lower levels that represent the plan to accomplish the entire contract work scope consistent with internal organizations and processes. The contractor shall define and describe each element of the CWBS in the CWBS dictionary. The contractor shall update the CWBS and CWBS dictionary as changes occur or additional system definition is accomplished. The contractor shall prepare the CWBS IAW CDRL B004.

3.1.1.1.6 Work Planning and Scheduling

When required by the DO, the requirements of this paragraph shall apply. The contractor shall develop, document, manage, and apply an Integrated Master Schedule (IMS) that presents the contractor's and subcontractor's plans and schedules to meet the requirements of the contract. The contractor shall develop and document a tiered scheduling system based on the CWBS elements showing the program milestones and prerequisite events, conferences, reviews, data submittals, and deliveries. The contractor shall construct the IMS to ensure that the program milestones are met and to ensure that deliveries meet the requirements of the contract.

Contractor schedule information delivered to the Government or presented at program reviews shall originate from the IMS. The contractor shall perform analyses of the IMS tasks, compare the IMS tasks to the schedule baseline, report potential or existing problem areas, and recommend corrective actions to eliminate or reduce schedule impact. The contractor shall revise the IMS, where necessary, to reflect contract changes. The contractor shall use the IMS as

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a day-to-day execution tool and to periodically assess progress in meeting program requirements. The contractor shall prepare the IMS IAW CDRL B005.

3.1.1.2 Integrated Product Teams (IPTs)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, implement, and maintain an IPT structure for the duration of the contract. The purpose of an IPT is to bring together the functions that have a stake in the performance of a product or process and concurrently make integrated decisions affecting that product or process. IPT membership will consist of multi-functional stakeholders working together with a product-oriented focus. Each IPT will be empowered to make critical life cycle decisions regarding each product or process within their purview. IPTs will be applied at various levels ranging from the overall structure of an organization to informal groups functioning across existing units. With Government input, the contractor shall define and document the composition, structure, roles, and responsibilities of each IPT. Each IPT will maintain a list of membership. Each IPT will consist of Government and contractor personnel and have Government and contractor co-chairs. Each IPT will publish an agenda before each meeting. Each IPT will record and maintain meeting minutes. IPT minutes will be shared among and between the other IPTs.

3.1.1.3 Risk Management

The purpose of the risk management process is to continuously identify, analyze, treat, and monitor the risks to the program. When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct risk management to systematically control the uncertainty in the project's ability to meet cost, schedule, and performance requirements. The contractor may use NAVAIRINST 5000.21B for guidance in the contractor's approved Risk Management Plan (RMP) (CDRL A00F). The contractor shall participate in the Government Risk Working Group established for this program. The contractor shall report risk information, data, and analysis in the Contractor's Progress, Status, and Management Report (CPSMR) cited in 3.1.1 above.

3.1.1.4 Quality Management

The purpose of the quality management process is to assure that the products and implementations of the life cycle meet contractor quality objectives and Government requirements. When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a quality management process IAW IEEE Std 12207-2008, sections 6.2.5 and 7.2.3; and ANSI/ASQ Q9001-2008 (or equivalent quality management system). The contractor may use ANSI/ASQ Q9000-2005 and ANSI/ASQ Q9004-2009 for guidance.

3.1.1.4.1 Control of GFE/GFI

When specified by the delivery order (DO), the contractor shall perform the following tasks to control GFE as part of the quality management process:

- a. Examine upon receipt, consistent with practicality, to detect damage
- b. Provide storage that precludes deterioration
- c. Examine prior to installation, consistent with practicality, to detect damage
- d. Identify and protect from improper use or disposition



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e. Verify and audit quantity periodically

3.1.1.4.2 Use of Contractor's Inspection Equipment

When specified by the DO, the contractor shall make measuring and testing devices available for use by the Government when required to determine conformance with contract requirements. The contractor shall provide the personnel needed to operate such devices and to verify calibration, accuracy, and condition.

3.1.1.5 Configuration Management (CM)

The purpose of the CM process is to establish and maintain the integrity of identified Configuration Items (CIs) over their lifecycle. When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a CM process IEEE Std 12207-2008, section 6.3.5 and 7.2.2; and ANSI/EIA-649-B 2011 in the contractor's approved Configuration Master Plan (CMP), prepared IAW with CDRL A00E. The contractor shall place Government-Furnished Software (GFS), NDI, and Commercial Item software, and each item's associated documentation under CM upon receipt. The contractor shall place Commercial Item software items under CM as "disk image" files of the physical media. The Government will maintain a separate CM repository in the MRTS Integration Laboratory (MIL). This repository is not accessible outside the MIL, and is also used by Government team members to store Government developed MRTS software and documentation and to track repository status. The contractor shall address the MIL in the CMP and ensure that the MIL is updated each time a testing event occurs and that all changes in software/documentation, are captured in the MIL repositories.

3.1.1.5.1 Change Management

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a process to accomplish change management. The contractor shall use Engineering Change Proposals (ECPs) and Request for Deviations (RFDs) to request changes to an approved baseline. The contractor shall prepare the Engineering Change Proposal (ECP) and Request for Deviation (RFD) IAW CDRLs A00A and A00B, respectively.

3.1.1.5.2 Configuration Status Accounting

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a process to accomplish configuration status accounting. The contractor shall identify and document all items incorporated into or deleted from the training device during development and modification. The contractor shall prepare the Technical Directive (TD) (Training Equipment Change Directive (TECD)) IAW CDRL D001.

3.1.1.5.3 Infoshare Website

When required by the DO, the requirements of this paragraph shall apply. The contractor will be provided access to a secure NAWCTSD Infoshare Website to post and retrieve contract-related documents, data, and information. The NAWCTSD Infoshare Website meets current Federal Government, Navy, and NAWCTSD Information Assurance standards. The contractor shall contact the NAWCTSD Infoshare point of contact listed in the contract to coordinate access to the NAWCTSD Infoshare Website. The contractor shall notify the Government team via email when new or changed contract-related documents, data, and information are posted in the

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NAWCTSD Infoshare Website. Only unclassified data shall be posted in the NAWCTSD Infoshare Website.

**3.1.2 Security (Classified Programs)**

When specified by the DO, the development of and/or the resultant DO product may require a security classification level of Secret. The Contractor shall be required to work with classified data that does not exceed the Secret security classification level. All Contractor personnel under the MRTS contract shall have the clearance needed to work on the tasks assigned. The Contractor shall comply with all security requirements as identified by the latest revision of the following documents: the DOD Contract Security Classification Specification (DD Form 254), which is executed IAW DOD 5220.22-M and DODI 5200.01. Additional program security requirements shall be identified in each DO as needed.

When on-site at NAWCTSD and during travel, the Contractor shall also adhere to all local security procedures required by the facility. The Contractor shall arrange for security badges and passes ensuring Contractor personnel and Contractor vehicles are granted access to buildings and sites to complete individual DOs. The Common Access Card (CAC) shall be the principal identity credential for supporting interoperable access to installations, facilities, buildings, and controlled spaces.

**3.1.2.1 Operations Security (OPSEC)**

The contractor shall provide OPSEC protection for classified information and sensitive information. Security policy, procedures, and requirements for classified information are provided in DoD 5220.22-M. The contractor shall enforce these safeguards throughout the life of the contract including the development, delivery, support phases, and the disposition/storage of classified and controlled unclassified information at contract completion. If the contractor does not have an established security plan that addresses the protection of proprietary, sensitive, or controlled unclassified information, the Government will provide a template for the development of an OPSEC Plan. Regardless of the contractor's established security plan, the contractor shall comply with the requirements specified in the following subordinate paragraphs. The contractor shall prepare the OPSEC Plan IAW CDRL A00G.

**3.1.2.2 Personnel Security - Background Check (Physical Access to and Working on DoD Installations)**

The Common Access Card (CAC) shall be the principal identity credential for supporting interoperable access to DoD installations, facilities, buildings, controlled spaces, and access to U.S. Government information systems IAW FAR 52.204-9. A National Agency Check with Local Agency Checks including Credit Check (NACLC) will be required for permanent issuance of the credential. There shall be no additional NACLC submission for an individual holding a valid national security clearance. The Government may issue the credential upon favorable return of the Federal Bureau of Investigations (FBI) fingerprint check, pending final favorable completion of the NACLC. Contractors with clearances shall contact the NAWCTSD security office to initiate the CAC issuance process... Access to restricted areas, controlled unclassified information (sensitive information), or Government Information Technology by contractor personnel shall be limited to those individuals who have been determined trustworthy as a result of the favorable completion of a NACLC or who are under the escort of appropriately cleared

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personnel. Where escorting such persons is not feasible, a NACLC shall be conducted and favorably reviewed by the appropriate DoD component, agency, or activity prior to permitting such access. The contractor shall use the Standard Form 86 (Questionnaire for National Security Positions) in order to obtain the CAC. The contractor shall submit the Standard Form 86 to the NAWCTSD Security Office for processing, when required by the DO. Contractors shall contact the NAWCTSD Security Office to initiate the CAC issuance process.

3.1.2.2.1 Government-Issued Personal Identification Credentials

The contractor and subcontractor(s) (when applicable) shall account for all forms of U.S. Government-provided identification credentials (CAC or U.S. Government-issued identification badges) issued to the contractor (or their employees in connection with performance) under the contract. The contractor shall return such identification credentials to the issuing agency at the earliest of any of the circumstances listed below, unless otherwise determined by the U.S. Government. The contracting officer may delay final payment under the contract, if the contractor or subcontractor fails to comply with these requirements.

- a. When no longer needed for contract performance.
- b. Upon completion of the contractor employee's employment.
- c. Upon contract completion or termination.

3.1.2.3 Personnel Security – Background Checks

Contractor personnel working at government sites and in the contractor's own facilities shall undergo the company internal vetting process prior to gaining access to U.S. Government controlled unclassified information or performing government-related sensitive duties. To comply with immigration law, the contractor shall use the Employment Eligibility Verification Program (E-Verify) IAW FAR 52.222-54. The contractor shall ensure that foreign persons, as defined under section 120.16 of the International Traffic and Arms Regulation (ITAR) (22 CFR, Parts 120 - 130), are not given access to U.S. Government controlled unclassified information, sensitive information, defense articles, defense services, or technical data, as defined in the ITAR, Part 120.

3.1.2.4 Information Assurance and Personnel Security Requirements for Accessing Government Information Technology (IT) Systems - Credentialing Standards

The contractor shall comply with the IA and personnel security requirements for accessing U.S. Government IT systems specified in the contract. Contractors requiring access to U.S. Government IT systems will be subject to a background check. The contractor shall review and become familiar with the credentialing standards presented in OPM Memorandum for Issuing Personal Identity Verification Cards, to use as an aid in their employee selection process. The NAWCTSD Security Office will apply the credentialing standards and execute the credentialing process for individual contractors.

3.1.2.5 Unclassified Contractor-Owned Network Security

The contractor shall take means (defense-in-depth measures) necessary to protect the confidentiality, integrity, and availability of Government controlled unclassified information. The contractor shall manage and maintain contractor-owned unclassified IT network assets (including computer assets used for contractor teleworkers) used to process U.S. Government

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controlled unclassified information (sensitive information) IAW commercial best practices, vendor-specific, or other nationally or internationally-recognized IT configuration and management standards (e.g., Center for Internet Security (CIS), Control Objectives for Information and related Technology (COBIT<sup>®</sup>), Common Criteria, National Information Assurance Program (NIAP), DoD, Defense Information Systems Agency (DISA), International Computer Security Association (ICSA), National Industrial Security Program (NISP), National Security Agency (NSA), System Administration, Networking, and Security Institute (SANS), and ISO/IEC 27002:2005). The contractor shall prevent U.S. Government controlled unclassified information from being placed or stored on peer-to-peer applications or social media applications on contractor owned networks, including Teleworker computer assets. The contractor shall manage and control networks (which contain U.S. Government controlled unclassified information) serving in a Continuity of Operations (COOP) capacity to meet the same personnel and security requirements identified in this SOW and the DD-Form-254.

**3.1.2.6 Information Security Requirements for Protection of Unclassified DoD Information On Non-DoD Systems**

The contractor shall safeguard unclassified DoD information stored on non-DoD information systems to prevent the loss, misuse, and unauthorized access to or modification of this information. The contractor shall:

- a. Not process DoD information on public computers (e.g., those available for use by the general public in kiosks or hotel business centers) or computers that do not have access control.
- b. Protect information by no less than one physical or electronic barrier (e.g., locked container or room, login and password) when not under direct individual control.
- c. Sanitize media (e.g., overwrite) before external release or disposal.
- d. Encrypt the information that has been identified as Controlled Unclassified Information (CUI) when it is stored on mobile computing devices such as laptops and personal digital assistants, or removable storage media such as compact disks, using the best available encryption technology.
- e. Limit information transfer to subcontractors or teaming partners with a need to know and a commitment to at least the same level of protection.
- f. Transmit e-mail, text messages, and similar communications using technology and processes that provide the best level of privacy available, given facilities, conditions, and environment. Examples of recommended technologies or processes include closed networks, virtual private networks, public key-enabled encryption, and Transport Layer Security (TLS).
- g. Encrypt organizational wireless connections and use encrypted wireless connection, where available, when traveling. When encrypted wireless is not available, encrypt application files (e.g., spreadsheet and word processing files), using no less than application-provided password protection level encryption.
- h. Transmit voice and fax transmissions only when there is a reasonable assurance that access is limited to authorized recipients.
- i. Not post DoD information to Web site pages that are publicly available or have access limited only by domain or Internet protocol restriction. Such information may be posted to Web site pages that control access by user identification or password, user certificates, or other technical means and provide protection via use of TLS or other equivalent technologies. Access control may be provided by the intranet (vice the Web site itself or the application it hosts).

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j. Provide protection against computer network intrusions and data exfiltration, including no less than the following:

(1) Current and regularly updated malware protection services, e.g., anti-virus, anti-spyware.

(2) Monitoring and control of inbound and outbound network traffic (e.g., at the external boundary, sub-networks, individual hosts) including blocking unauthorized ingress, egress, and exfiltration through technologies such as firewalls and router policies, intrusion prevention or detection services, and host-based security services.

(3) Prompt application of security-relevant software patches, service packs, and hot fixes.

k. Comply with other current Federal and DoD information protection and reporting requirements for specified categories of information (e.g., critical program information, Personally Identifiable Information (PII), export controlled information) IAW the requirements of the contract.

### 3.1.3 Security (Unclassified Programs)

The security requirements specified herein shall apply to the contractor and subcontractors. The contractor shall comply with applicable on-site security regulations related to facility access and building access. The contractor shall safeguard U.S. Government controlled unclassified information (sensitive information) IAW the contractor's locally established security plan (if the contractor already has an established local security plan). The contractor shall enforce these safeguards throughout the life of the contract including the transport and delivery phases and the disposition and storage of controlled unclassified information at contract completion. If the contractor does not have an established security plan that addresses the protection of proprietary, sensitive, or controlled unclassified information, the Government will provide a template for the development of an OPSEC Plan. Regardless of the contractor's established security plan, the contractor shall comply with the requirements specified in the following subordinate paragraphs. The contractor shall prepare the OPSEC Plan IAW CDRL A00G.

#### 3.1.3.1 Personnel Security - Background Check (Physical Access to and Working on DoD Installations)

The Common Access Card (CAC) shall be the principal identity credential for supporting interoperable access to DoD installations, facilities, buildings, controlled spaces, and access to U.S. Government information systems IAW FAR 52.204-9. A National Agency Check with Local Agency Checks including Credit Check (NACLIC) will be required for permanent issuance of the credential. The Government may issue the credential upon favorable return of the Federal Bureau of Investigations (FBI) fingerprint check, pending final favorable completion of the NACLIC. There shall be no additional NACLIC submission for an individual holding a valid national security clearance. Access to restricted areas, controlled unclassified information (sensitive information), or Government Information Technology by contractor personnel shall be limited to those individuals who have been determined trustworthy as a result of the favorable completion of a NACLIC or who are under the escort of appropriately cleared personnel. Where escorting such persons is not feasible, a NACLIC shall be conducted and favorably reviewed by the appropriate DoD component, agency, or activity prior to permitting such access. The contractor shall use the Standard Form 86 (Questionnaire for National Security Positions) in

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order to obtain the CAC. The contractor shall submit the Standard Form 86 to the NAWCTSD Security Office for processing. Contractors shall contact the NAWCTSD Security Office to initiate the CAC issuance process.

3.1.3.1.1 Government-Issued Personal Identification Credentials

The contractor and subcontractor(s) (when applicable) shall account for all forms of U.S. Government-provided identification credentials (CAC or U.S. Government-issued identification badges) issued to the contractor (or their employees in connection with performance) under the contract. The contractor shall return such identification credentials to the issuing agency at the earliest of any of the circumstances listed below, unless otherwise determined by the U.S. Government. The contracting officer may delay final payment under the contract if the contractor or subcontractor fails to comply with these requirements.

- a. When no longer needed for contract performance.
- b. Upon completion of the contractor employee's employment.
- c. Upon contract completion or termination.

3.1.3.2 Personnel Security – Background Checks (Contractor Facility)

Contractor personnel working in the contractor's own facilities shall undergo the company internal vetting process prior to gaining access to U.S. Government controlled unclassified information. To comply with immigration law, the contractor shall use the Employment Eligibility Verification Program (E-Verify) IAW FAR 52.222-54. The contractor shall ensure that foreign persons, as defined under section 120.16 of the International Traffic and Arms Regulation (ITAR) (22 CFR, Parts 120 - 130), are not given access to U.S. Government controlled unclassified information, sensitive information, defense articles, defense services, or technical data, as defined in the ITAR, Part 120.

3.1.3.3 Information Assurance and Personnel Security Requirements for Accessing Government Information Technology (IT) Systems - Credentialing Standards

The contractor shall comply with the IA and personnel security requirements for accessing U.S. Government IT systems specified in the contract. Contractors requiring access to U.S. Government IT systems will be subject to a background check. The contractor shall review and become familiar with the credentialing standards presented in OPM Memorandum for Issuing Personal Identity Verification Cards, to use as an aid in their employee selection process. The NAWCTSD Security Office will apply the credentialing standards and execute the credentialing process for individual contractors.

3.1.3.4 Unclassified Contractor-Owned Network Security

The contractor shall take means (defense-in-depth measures) necessary to protect the confidentiality, integrity, and availability of Government controlled unclassified information. The contractor shall manage and maintain contractor-owned unclassified IT network assets (including computer assets used for contractor Teleworkers) used to process U.S. Government controlled unclassified information (sensitive information) IAW commercial best practices, vendor-specific, or other nationally or internationally-recognized IT configuration and

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management standards (e.g., Center for Internet Security (CIS), Control Objectives for Information and related Technology (COBIT®), Common Criteria, National Information Assurance Program (NIAP), DoD, Defense Information Systems Agency (DISA), International Computer Security Association (ICSA), National Industrial Security Program (NISP), National Security Agency (NSA), System Administration, Networking, and Security Institute (SANS), and ISO/IEC 27002:2005). The contractor shall prevent U.S. Government controlled unclassified information from being placed or stored on peer-to-peer applications or social media applications on contractor owned networks, including teleworker computer assets. The contractor shall manage and control networks (which contain U.S. Government controlled unclassified information) serving in a Continuity of Operations (COOP) capacity to meet the same personnel and security requirements identified in this SOW.

3.1.3.5 Information Security Requirements for Protection of Unclassified DoD Information On Non-DoD Systems

The contractor shall safeguard unclassified DoD information stored on non-DoD information systems to prevent the loss, misuse, and unauthorized access to or modification of this information. The contractor shall:

- a. Not process DoD information on public computers (e.g., those available for use by the general public in kiosks or hotel business centers) or computers that do not have access control.
- b. Protect information by no less than one physical or electronic barrier (e.g., locked container or room, login and password) when not under direct individual control.
- c. Sanitize media (e.g., overwrite) before external release or disposal.
- d. Encrypt the information that has been identified as Controlled Unclassified Information (CUI) when it is stored on mobile computing devices such as laptops and personal digital assistants, or removable storage media such as compact disks, using the best available encryption technology.
- e. Limit information transfer to subcontractors or teaming partners with a need to know and a commitment to at least the same level of protection.
- f. Transmit e-mail, text messages, and similar communications using technology and processes that provide the best level of privacy available, given facilities, conditions, and environment. Examples of recommended technologies or processes include closed networks, virtual private networks, public key-enabled encryption, and Transport Layer Security (TLS).
- g. Encrypt organizational wireless connections and use encrypted wireless connection, where available, when traveling. When encrypted wireless is not available, encrypt application files (e.g., spreadsheet and word processing files), using no less than application-provided password protection level encryption.
- h. Transmit voice and fax transmissions only when there is a reasonable assurance that access is limited to authorized recipients.
- i. Not post DoD information to Web site pages that are publicly available or have access limited only by domain or Internet protocol restriction. Such information may be posted to Web site pages that control access by user identification or password, user certificates, or other technical means and provide protection via use of TLS or other equivalent technologies. Access control may be provided by the intranet (vice the Web site itself or the application it hosts).
- j. Provide protection against computer network intrusions and data exfiltration, including no less than the following:

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- (1) Current and regularly updated malware protection services, e.g., anti-virus, anti-spyware.
  - (2) Monitoring and control of inbound and outbound network traffic (e.g., at the external boundary, sub-networks, individual hosts) including blocking unauthorized ingress, egress, and exfiltration through technologies such as firewalls and router policies, intrusion prevention or detection services, and host-based security services.
  - (3) Prompt application of security-relevant software patches, service packs, and hot fixes.
- k. Comply with other current Federal and DoD information protection and reporting requirements for specified categories of information (e.g., critical program information, Personally Identifiable Information (PII), export controlled information) IAW the requirements of the contract.

#### 3.1.4 Information Assurance

The contractor shall comply with the System IA controls as defined in DODI 8500.2 for a Mission Assurance Category III (MAC III), Sensitive/Classified device, and meets any additional IA performance requirements specified in the delivery order.

##### 3.1.4.1 IA Certification and Accreditation Support

The contractor shall support the IA PIT risk management process IAW DODI 8510.01, DON CIO Memo 02-10, Platform Information Technology Definitions, and DON Platform IT Information Assurance Guidance. The contractor shall prepare the Scientific and Technical Reports (PIT Determination Request Document) and the Scientific and Technical Reports (PIT Risk Approval (PRA) Request Package) IAW CDRL A00J.

##### 3.1.4.2 System/Software Integrity Testing and Certification

The contractor shall test and certify that the trainer applications software are designed to function in a properly secured operating system environment and is free of elements that might be detrimental to the secure operation of the resource operating system, as described in DODI 8500.2. The contractor shall provide a Vendor Integrity Statement for contractor-developed software applications. Commercial Item software does not require a Vendor Integrity Statement. The contractor shall prepare the Scientific and Technical Reports (Vendor Integrity Statements for Software) IAW CDRL A00I.

##### 3.1.4.2.1 Network Devices

On all Government owned lab and trainer assets, the Contractor shall incorporate network switching devices that are equipped with the means to manage ports and that have been validated and certified by NIAP (<http://www.niap-ccavs.org/>) or CC evaluation and validation scheme (<http://www.commoncriteriaportal.org/products.html>) The contractor shall develop procedures to address device administration, as identified by the government. The contractor shall prepare Scientific and Technical Reports (Information Assurance System Administrator Guide (SAG)) IAW CDRL A00H.



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3.1.4.2.2 Intrusion Detection

On all Government owned Orlando RDT&E connected lab assets, the Contractor shall maintain the DOD -approved Host-Based Security System (HBSS) Common Management Agent (CMA, a.k.a ePO agent) software. The HBSS CMA software is Government-furnished. The Contractor shall acquire and provide required licensing/key information to the government prior to receiving the HBSS MCA software.

3.1.4.2.3 Virus Protection

The Contractor shall incorporate DOD licensed virus protection software, on all government owned lab, EPM and training systems, available at the following DOD website: <https://patches.mont.disa.mil/Default.aspx> or utilize HBSS CMA antivirus functionality. The contractor shall develop procedures to address executing antivirus updates, scans, and virus sanitization. The contractor shall prepare Scientific and Technical Reports (Information Assurance System Administrator Guide (SAG)) IAW CDRL A00H.

IA and IA enabled IT products provided, or integrated, with government owned lab, EPM, or training systems shall be configured IAW DoD STIGs or SNAC guides. If DoD guides are not available, the following sources are acceptable in descending order as available:

- a. Commercially accepted practices, such as System Administration, Networking, and Security (SANS) Institute
- b. Independent testing results, such as International Computer Security Association (ICSA);  
or
- c. Vendor literature.

3.1.4.2.4 Application Registration

The Contractor shall register each version of the MRTS AIS Software Application products (e.g., MRTS software and any additional software developed under this contract) in the DON Applications and Database Management System (DADMS).

3.1.4.2.5 Third Party Software

The Contractor shall ensure that shareware or freeware are not implemented in government owned lab, EPM, or training systems unless compelling circumstances exists, in which case the developer shall evaluate and verify the software is free of malware, back doors or buffer overflows and ensure Configuration Control Review Board (CCRB) approval is explicitly granted. If the application relies on third party software products or libraries selected by the developer, the developer shall ensure the components comply with all requirements within the current Application Security and Development STIG and shall report the shareware and freeware in the software documentation.

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3.1.4.2.6 Database Management System

The Contractor shall configure any Database Management Systems (DBMSs) in the MIL and fielded training systems and MRTS AIS Software Application products IAW the current applicable Database STIG.

3.1.4.2.7 Ports, Protocols, and Services

The Contractor shall ensure that all non-required PPS for the MRTS AIS Software Application products, MIL, and fielded training systems are disabled/closed IAW DoD Instruction 8551.1, Ports, Protocols, and Services Management.

3.1.4.2.8 Audit Logging

The Contractor shall incorporate an auditing functionality on the MIL and fielded trainers to consolidate security and audit events from operating systems, host-based security systems and network control devices. The auditing functionality shall provide the means to:

- a. Consolidate audit activity as required by DODI 8500.2, IA control ECAR-3. In this context, consolidation implies one repository for each fielded network, not a single location connected to all devices.
- b. View the events using a GUI, sort and filter events, and generate reports.
- c. Export events to a file for a specified period of time, while preserving the integrity of the file.
- d. Import events from its own exported file format for a specified period of time, so that the file is viewable using the GUI.
- e. Backup audit logs, off the originating system

The Contractor shall develop a process and supporting procedures for the utilization of the auditing solution. The contractor shall prepare Scientific and Technical Reports (Information Assurance System Administrator Guide (SAG)) IAW CDRL A00H.

3.1.4.2.9 Software Management System

The Contractor shall develop a software management system in the MIL and fielded training systems, to support updates (e.g. IAVA's, IAVB's, IAVTA's, anti-virus software, switch firmware/operating system) to the Commercial Item software components used in the MIL and fielded training systems, including anti-virus software. The Contractor shall develop a process and supporting procedures for the utilization of the centralized software management system. This process shall be approved by the CCRB prior to implementation. The contractor shall prepare Scientific and Technical Reports (Information Assurance System Administrator Guide (SAG)) IAW CDRL A00H.

3.1.4.2.10 Encryption

The contractor shall incorporate DoD-authorized encryption products (see **Error! Reference source not found.**) in the MIL and fielded training systems, for data at rest that is stored on mobile computing devices such as laptops and personal digital assistants (PDAs), or removable

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storage media (e.g. CD, DVD, diskette, USB/Flash memory). The cryptography shall be **Error! Reference source not found.** compliant.

3.1.4.2.11 Recovery of Encrypted Data

There shall be a mechanism established to ensure encrypted data can be recovered in the event the primary encryption system fails. The contractor shall develop a process and supporting procedures for the recovery of encrypted data. The contractor shall address all recovery procedures in the CMP.

3.1.4.3 IA Compliance

The contractor shall test, verify, and document that the security architecture and configuration of the MIL and fielded trainers are in compliance with the security requirements and IA controls identified in DODI 8500.2 for a MAC III, sensitive and / or classified system IAW the delivery order. The contractor shall use DoD-authorized assessment tools to perform IA testing (e.g. Retina, DISA Security Content Automation Protocol (SCAP) Tool, NESSUS/ACAS, HBSS), document, verify, and validate each applicable operating system IA configuration. For the MIL, the Contractor shall provide results for automated scans and manual STIG checks applicable to each asset, not less than monthly. Prior to testing, the Government will provide a list of assessment tools that the Government intends to use during testing. The contractor shall document the IA compliance results in the PRA Package cited above in 3.1.4.1. The contractor shall work with NAWCTSD during coordination efforts with the Designated Accrediting Authority to support NAWCTSD in obtaining a system PRA concurrent with delivery of the product under development and/or scheduled certification and accreditation efforts for the MIL and fielded training systems.

The contractor will meet the requirements for access to the eMASS database, facilitating the role of an Information System Security Engineer (ISSE) for purposes of C&A data entry/management.

3.1.4.3.1 Processing of National Security Information

The Contractor shall use commercial IA and IA-enabled IT products in the MIL and fielded training systems, which have been evaluated and validated, as appropriate, IAW the National Information Assurance Partnership (NIAP) (<http://www.niap-ccavs.org/cc-scheme/vpl/>) or Common Criteria (CC) evaluation and validation scheme (<http://www.commoncriteriaportal.org/public/consumer/>) shall be used to enter, process, store, display, or transmit national security information, to the maximum extent practicable.

3.1.4.3.2 IA Vulnerability Management Program (IAVMP)

The contractor shall incorporate the applicable DoD and DoN IAVMP messages issued through Developmental Testing (DT)-3 (Government Preliminary Inspection (GPI)). The contractor shall document the unincorporated IA Vulnerability Alerts (IAVAs), IA Vulnerability Bulletins (IAVBs), and IA Vulnerability Technical Advisories (IAVTAs). The contractor shall provide justification for each unincorporated IAVMP message (i.e., describe the specific negative impact the IAVMP message incorporation would have on trainer operation). The contractor shall document the information resulting from this task in the DIACAP C&A Package cited above in 3.1.4.1. The contractor shall document this information in the Plan of Action and Milestones

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(POA&M) tab of the package cited above in 3.1.4.1. The contractor shall use the DoD-authorized assessment tools to perform IAVA compliance validation and verification (e.g. Retina and SCAP Tool).

3.1.4.3.3 IA Requirements for Operating Systems

The Contractor shall incorporate IA and IA-enabled devices and software for the MIL and fielded training systems that:

- a. Have been validated or are under evaluation by NIAP or CC scheme.
- b. Are configurable IAW applicable DoD STIGs or System and Network Attack Center (SNAC) guides. DoD STIGs and SNAC guides are available at <http://iase.disa.mil/>.
- c. Can incorporate the DoD Information Assurance Vulnerability Management Program (IAVMP) IAW DODI 8500.2.
- d. Are supportable for the expected life cycle of the trainer

3.1.4.3.4 IA Requirements for GOTS Developed MRTS Software Application Systems

The Contractor shall develop GOTS MRTS Software Application Systems (e.g., MRTS software and any additional software developed under this contract) that:

- a. Function with employed IA-Enabled Operating Systems that have been configured IAW the applicable DoD STIGs.
- b. Maintain operational capabilities with managed network control devices and boundary defense mechanisms that have been validated and certified by NIAP (<http://www.niap-ccevs.org/>) or CC evaluation and validation scheme (<http://www.commoncriteriaportal.org/products.html>).
- c. Are configured, and developed IAW the current DoD Application Security and Developmental STIG.

3.1.4.4 IA Contractor Training and Certification

Contractor personnel accessing information systems with privilege accounts (i.e. System Administrator, Root Level) shall have the IA training and certification required by DFARS 252.239-7001.

3.2 Detailed Tasks

3.2.1 Trainer Design, Development, and Fabrication

When required by the delivery order (DO), the contractor shall design, document, develop, fabricate, integrate, test, validate, install, and deliver a MRTS training system product that meets the performance requirements. This paragraph contains a representative list of products and capabilities likely to be delivered and activities to be performed under this contract as requirements emerge. Software products/capabilities will be delivered IAW CDRL A00C, Computer Software Product End Item.

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- a. Design, develop, test and deliver a training system to meet a new training requirement consistent and compatible with the MRTS architecture and family of trainers.
- b. Design, develop, re-use, modify, expand, interface and add MRTS training software libraries, code and media, including:
  - 1) Networked real-time workstation simulations and displays and instructor support software applications in Visual Studio .NET (using C#) under Windows XP and Windows 7.
  - 2) Image generators for simulation-based training
  - 3) Immersive photography-based training system products.
  - 4) Windows software using the Microsoft Gaming framework library.
  - 5) Linux software (using Red Hat and CentOS) using Wine/Mono and other Linux based libraries. The MRTS software also simulates the Redhat Linux software at various revisions to support simulated equipment, such as a networked Linux based thin client.
  - 6) Software interfaces to other simulators and tactical software systems. (All MRTS Trainers are currently on isolated networks to themselves. Potential future requirement)
- c. Design and develop digital media, including computer generated 2D and 3D models, animations, photography, videography, sound effects and scripts in required formats as specified in individual DOs to support:
  - 1) Workstation simulation GUIs
  - 2) Reports and briefings
  - 3) Presentation media
  - 4) Trainer documentation (e.g., SIM, TSSD, transfer documents, CD/DVD labels)
- d. Life cycle support of:
  - 1) Training systems
  - 2) Training data products
  - 3) Trainer installation locations (including delivery, installation, upgrades)
  - 4) The MRTS Integration Laboratory (MIL)
- e. Provide configuration management and source control of:
  - 1) Software
  - 2) 2D and 3D graphic models and supporting media
  - 3) Trainer installation configuration
  - 4) Photographic and videographic imagery
  - 5) Documentation
  - 6) Training and presentation material
- f. Develop, conduct and document software testing and evaluation using approved methods.
- g. Conduct research activities to support enhancement or modifications of training systems, including:
  - 1) Design and develop software testbeds
  - 2) Explore new technologies
  - 3) Prepare research media and reports
  - 4) Participate in research execution
  - 5) Coordinate to obtain research participants
- h. Employ, document and refine process improvement procedures and practices.
- i. Produce and maintain documentation, including:

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- 1) Cold start procedures
- 2) Trainer support documents
- 3) Technical manuals
- 4) Training software documentation
- 5) Product user guides, training, reference media

### 3.2.2 Systems Engineering Processes

When required by the DO, the requirements of this paragraph shall apply. The contractor shall use the system engineering processes to define the requirements for the system, to transform the requirements into an effective product, and to verify and validate the functionality of the delivered product. The contractor shall perform the following tasks.

#### 3.2.2.1 System Requirements Definition

The purpose of the system requirements definition process is to define the requirements for a system that can provide the performance defined in the SOW. and associated specification. When required by the delivery order (DO), the contractor shall define, document, manage, and apply a requirements definition process. It is recommended that in creating the SEMP (CDRL A00D) and SDP (CDRL A003), IEEE Std 12207-2008, section 6.4.1 is used.

#### 3.2.2.2 System Requirements Analysis

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a requirements analysis process. IEEE Std 12207-2008, section 6.4.2; and IEEE Std 1233-1998 Edition (R2002) are recommended. The contractor shall analyze the specification and SOW requirements to determine lower level functional requirements. The contractor shall analyze the requirements and decompose lower level functional requirements. The contractor shall analyze the interaction between systems, subsystems, and components to derive the functional requirements. The contractor shall record specification requirements, technical SOW requirements, and contractor decomposed and derived requirements within the Requirements Traceability/Verification Matrix (RTVM) IAW CDRL A00K.

#### 3.2.2.3 Traceability

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a process and mechanism to accomplish traceability between the requirements, implementation configuration items, and test procedures. The contractor shall utilize an electronic tool (e.g. Doors, RequisitePro, Microsoft Access, Word, and/or Excel) to accomplish the requirement traceability function. Traceability shall be bi-directional. Backward traceability shall permit each RTVM element to explicitly trace to a source reference from a previous stage of development. Forward traceability shall permit each RTVM element to explicitly trace to a reference in a later stage of development. The scope of traceability shall be from requirement to test procedure to ensure each requirement is tested, however, traceability may stop at the functional level and need not continue into the implementation. The contractor shall provide the Government access to the traceability tool and its database. The contractor shall prepare the Scientific and Technical Reports (Requirements Traceability and Verification Matrix (RTVM)) IAW CDRL A00K.

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3.2.2.4 System Architectural Design

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply a system architectural design process. The IEEE Std 12207-2008, section 6.4.3 is recommended for use in creating the SEMP (CDRL A00D). The contractor shall prepare System/Subsystem Design Description (SSDD) IAW CDRL A009. The contractor shall prepare the Product Drawings/Models and Associated Lists IAW CDRL E001.

3.2.2.5 Software Requirements Analysis

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, manage, and apply software requirements analysis. The IEEE Std 12207-2008, section 7.1.2 is recommended for use in creating the SDP (CDRL A003). The scope of traceability is to the function level of the software. The contractor shall place links to the software requirements in the RTVM to accomplish bi-directional traceability. The contractor shall prepare the Software Requirements Specification (SRS) IAW CDRL A005. . In the event an SRS exists for the MRTS product, the existing document shall be updated with the new requirements/changes. If an SRS required by the DO does not exist, the contractor shall create one IAW CDRL A005.

3.2.2.6 Software Architectural Design

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, control, maintain, and implement a software architectural design. The IEEE Std 12207-2008, section 7.1.3 is recommended when creating the SDP (CDRL A003). The Contractor shall identify new functionalities to be added to the MRTS applications to meet new requirements, whether, when and how a new library should be created, and how to maintain existing libraries so that changes do not negatively affect other applications that use them. Software design documents shall be delivered in accordance with CDRLs A006 (Interface Design Description(IDD)) and A007 (Software Design Description (SDD)). In the event an SDD exists for the MRTS product, the existing document shall be updated with the new requirements/changes. If an SDD required by the DO does not exist, the contractor shall create one IAW the CDRLs.

3.2.2.6.1 Software and Data Asset Re-Use and Shared Repository

The Contractor shall re-use, expand and add to Government-owned software, libraries, data, databases and other code to the maximum extent practical. All products developed shall be provided by the contractor for retention on the government's MRTS repository.

3.2.2.7 Implementation

When required by the DO, the contractor shall define, document, control, maintain, and perform implementation. The IEEE Std 15288-2008, section 6.4.4 is recommended for use in creating the SEMP (CDRL A00D) and SDP (CDRL A003).

3.2.2.7.1 Software Implementation

The purpose of the software implementation process is to produce a specified system element that is implemented as a software product or service. When required by the DO, the contractor

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shall define, document, control, maintain, and implement software implementation. The IEEE Std 12207-2008, section 7.1.1 is recommended for use in creating the SDP (CDRL A003).

3.2.2.7.1.1 Development Environment and Practices

The Contractor shall follow established MRTS coding conventions. When specified by a DO, the Contractor shall re-using and extending capabilities previously developed by the MRTS laboratory.

3.2.2.7.1.1.1 Software Development Languages, Libraries and Tools

MRTS products were developed with C#, extensible markup language (XML), Microsoft Visual Studio, Microsoft Team Foundation, Microsoft DirectX Application Programming Interface (API), Microsoft Direct3D Vertex/Pixel shader assembler, Microsoft Direct3D high level shader language (HLSL), InstallShield (authoring install scripts), Open GL API, Windows API, object oriented concepts, algorithm analysis, Win32 sockets and threads, and structured query language (SQL). If the contractor requires additional languages or tools, Government approval is required to be obtained no later than SRR.

3.2.2.7.1.1.2 Digital Media/Art Development Languages, Libraries and Tools

MRTS products were developed with 3D Studio Max 2010 Adobe Photoshop CS4 or 5, Adobe Illustrator CS4 or 5, Autodesk Stitcher, SCM tools (specifically SVN) Adobe After Effects CS4 or 5, Adobe InDesign CS4 or 5, Adobe Flash CS4 or CS5, Microsoft Visio, Mechanical Drawing, MSTFAdobe Premiere Pro CS4 or CS5, Adobe Soundbooth, Animation/Rigging, and Scripting. If the contractor requires additional languages or tools, Government approval is required to be obtained no later than SRR.

3.2.2.7.1.2 Digital Media Products

The Contractor shall deliver 3D models, 2D graphics, photography, videography, animation and other media products in required formats (e.g., Autodesk .3ds) as specified in individual DOs. The Contractor shall produce, maintain, deliver, and integrate computer-generated graphics such as 3D models and 2D graphics, into existing software and immersive photographic training systems, as well as software under development and into the MRTS libraries. The Contractor shall deliver modeling and photographic data items IAW specific provisions of individual DOs. All digital media products shall be delivered IAW CDRL A00C, Computer Software Product End Items.

3.2.2.7.1.3 Image Generator Development and Support

The Contractor shall develop enhancements for existing 3D training solutions. The MRTS maintenance software uses 3D representations of the physical equipment involved in submarine radio room communications and operations of the torpedo room. Visual representations are presented to the student in a virtualized 3D environment where physical objects can be manipulated. Some of the tasks the students can perform include opening cabinets, removing and inserting circuit boards, setting dip switches, removing and replacing screws, and numerous other tasks involved in the maintenance of the equipment.



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3.2.2.7.1.4 Networking

For MRTS training systems, the Contractor shall apply network infrastructures, protocols, and secure interconnections between applications and real-time simulations. All subcomponents in the MRTS training software communicate via a centralized server. The server validates each communication packet against procedural steps in NAVY Interactive Electronic Technical Manuals (IETMs) to ensure the student has performed the required action in the correct sequence.

MRTS employs the Instructor Interface for training session set-up and administrative control. The Contractor shall develop networked simulations (synchronizing data between server and clients with student training status algorithms, containing robust, extendable simulation data packets) and event-based simulation (e.g., synchronizing trainee actions) as specified by individual DOs.

3.2.2.7.1.5 Interfacing to External Systems

Currently, there are no external interfaces to the MRTS training systems; however, this contract may involve connecting MRTS systems to external training systems in the future. The DO will specify the requirements for this capability when appropriate. When required by the DO, interface requirements shall be documented in the Interface Requirements Specification (IRS) and the Interface Design Document (IDD) IAW CDRLs A004 and A006, respectively.

3.2.2.7.1.6 Database Employment and Maintenance

The MRTS software architecture stores simulation and configuration data in an SQL database residing on a dedicated SQL server. The contractor shall be responsible for managing the internal software requirements of the SQL server.

3.2.2.8 System Integration

The purpose of the system integration process is to assemble a complete system that is consistent with the system architectural design. When required by the DO, the contractor shall define, document, manage, and apply a system integration process in the SEMP (CDRL A00D) and SDP (CDRL A003). The Government will retain the role of lead systems integrator and have final authority over products installed on the training systems. The contractor shall ensure all products on a particular device are integrated successfully such that one product does not interfere with the operability of another product on the same device.

3.2.2.9 Device Transition

The purpose of the device transition process is to install the verified system, together with enabling systems. When required by the DO, the contractor shall define, document, manage, and apply a system transition and installation process in the SEMP (CDRL A00D).

3.2.2.9.1 Software Version Description

When required by the DO, the requirements of this paragraph shall apply. The contractor shall define, document, control, maintain, validate, and prepare the trainer software. IEEE/EIA 12207.1-1997, sections 6.7, 6.13, and 6.24 is recommended when creating the SEMP (CDRL A00D) and SDP (CDRL A003). The contractor shall deliver the software, and databases required to meet the performance defined in the SOW and associated specification. The

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contractor shall deliver the non-Commercial Item software with corresponding source code, build tools, build procedures, executable code, configuration information, and build procedures IAW Computer Software Product End Item, CDRL A00C. The contractor shall deliver the Commercial Item software with the associated vendor manuals, documentation, physical media, warranty information, licenses, and installation procedures. The contractor shall transfer to the Government at device acceptance, the Commercial Item software licenses. The contractor shall prepare the Software Version Description (SVD) IAW CDRL A008.

3.2.2.9.1.1 Cold Start Procedures

When required by the DO, the requirements of this paragraph shall apply. The contractor shall develop, document, control, maintain, validate and prepare, computational subsystem cold start procedures. IEEE/EIA 12207.1-1997, sections 6.7 and 6.13, is recommended for use when developing cold start procedures. Cold start procedures are intended for use by the government to ensure that all system parameters are documented, and to ensure the product can be configured for each testing event. The contractor shall not use any type of disk image to accomplish a cold-start, however, once the cold-start procedures have been verified as correct and all information captured, software distribution to the fielded trainers may be accomplished with disk imaging technology. The contractor shall develop cold start procedures:

- a. For configuring applicable computer hardware settings such as in a BIOS or firmware
- b. For installing and configuring each operating system, to include user accounts, network connectivity, device drivers, and information assurance controls
- c. For Installing and configuring each software application
- d. For Installing the deliverable source code
- e. For Performing a software build(s) where executable program(s) are created from deliverable source code
- f. For Introducing Government-authorized source code changes; where the existing software build is removed and a new build is created
- g. That consist of detailed descriptive action to be performed; the expected result following the action; and an area to document abnormalities, discrepancies, errors, and pass/fail status
- h. That ensure that complex sequences of cold-start actions are broken down into discrete steps
- i. That can be accomplished without referring to external documentation
- j. That include listing the physical software media required to perform the cold-start
- k. That include Commercial Item software activation data, such as serial numbers and key codes

3.2.2.9.1.2 Installation and Configuration Procedures

When required by the DO, the requirements of this paragraph shall apply. The contractor shall develop, document, control, maintain, validate, and prepare the installation and configuration procedures. IEEE/EIA 12207.1-1997, sections 6.7 and 6.13 is recommended for use when developing installation and configuration procedures. The format shall be IAW the Systems Interface Manual, CDRL E002. Installation and Configuration Procedures are intended to support the devices on site for maintenance and installation purposes. The contractor shall prepare installation and configuration procedures for each computational subsystem acquired as

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a tightly integrated, ready to use system. Once the installation and configuration procedures have been verified as correct and all information captured, software distribution to the fielded trainers may be accomplished with disk imaging technology. The contractor shall develop installation and configuration procedures:

- a. For configuring applicable computer hardware settings such as in a BIOS or firmware
- b. For restoring the system software, such as the operating system, applications and data, to the original delivered configuration.
- c. For configuring the system software for use within the training device, such as user accounts, network connectivity, and information assurance controls
- d. That consist of detailed descriptive action to be performed; the expected result following the action; and an area to document abnormalities, discrepancies, errors, and pass/fail status
- e. That ensure that complex sequences of installation and configuration actions are broken down into discrete steps
- f. That can be accomplished without referring to external documentation
- g. That include listing the physical software media required to perform the installation and configuration procedure
- h. That include Commercial Item software activation data, such as serial numbers and key codes

3.2.2.9.1.3 Media and Storage Devices

When required by the DO, the requirements of this paragraph shall apply. The contractor shall provide to the Government the blank media and mass storage devices necessary to perform each subsystem cold start and installation procedure. The Government will retain custody and control of the media and storage devices created or used by the Government to accomplish testing. The contractor shall provide the additional media and mass storage devices necessary for the contractor's internal archiving, development, testing, and other engineering and CM purposes.

3.2.2.9.1.4 Cold Start and Installation Procedure Media

When required by the DO, the requirements of this paragraph shall apply. The contractor shall prepare a unique set of physical media for each computational subsystem. The contractor shall prepare the physical media required to perform each subsystem cold-start procedure with labeling that:

- a. Is formatted consistently
- b. Is permanently attached to the physical media
- c. Identifies the software vendor name
- d. Identifies the software product name
- e. Identifies the software version number
- f. Identifies the software release date
- g. Identifies the contractor's Configuration Control identifier
- h. Identifies the total number of media pieces that compose each configured item
- i. Identifies the individual piece number within a multiple piece item, such as "Disk 2 of 5" or "DVD 1 of 3"

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3.2.2.9.1.5 Automated Processes

When required by the DO, the contractor shall document, control, maintain, validate, and deliver all computational automated processes (e.g., scripts, batch files, job control language) in the same manner as software items.

3.2.2.9.1.6 Contractor Execution

When required by the DO, the requirements of this paragraph shall apply. Prior to the start of each Test Readiness Review (TRR), the contractor shall execute and validate each subsystem cold start and installation procedure. The contractor shall perform the entire cold start and installation procedure, step-by-step as written, and document the results of each step. The contractor shall present the results of each contractor-run cold start and installation procedure to the Government for review at the following TRR event. The contractor shall execute, document, correct and validate each cold start and installation procedure until no discrepancies exist.

3.2.2.10 System Validation

The purpose of the system validation process is to provide objective evidence that the performance of the installed system, when in use, meets the requirements of the SOW and associated specification. When required by the DO, the contractor shall define, document, manage, and apply a system validation process. IEEE Std 15288-2008, section 6.4.8 is recommended for use when developing the system Test and Evaluation (T&E) Master Plan (TEMP).

3.2.2.11 Instructor / Contractor Maintenance Support (CMS) Training

When required by the DO, the requirements of this paragraph shall apply. The contractor shall provide instructor-operator and maintenance training and IA training to the Government during on-site installation.

3.2.3 Meetings and Reviews

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct, attend, and participate in meetings and reviews to be held at both the contractor and Government facilities. The specific locations, dates, and duration of the meetings shall be as specified in the DO. Meetings and reviews will be chaired by a Government representative. The contractor shall be prepared to explain the reasoning, assumption, and methodologies in arriving at particular conclusions, recommendations, or alternatives in the accomplishment of the tasks required by the contract. The contractor shall prepare drawings and other data to aid in the presentations. The contractor shall have key personnel and support available to carry out the meeting. Subcontractors shall attend meetings and reviews when required to address key elements. The contractor shall prepare the Meeting Agenda (CDRL B002), Meeting Minutes (CDRL B003), and Presentation Material appropriate for the meetings and reviews. Except where noted herein, meetings and reviews shall be considered fulfilled when the following items are completed:

- a. A formal meeting has been conducted and the meeting and reviews are presented to the Government.
- b. Topics required for discussion and presentation have been covered.

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- c. Action items requiring contractor response have been resolved.
- d. The Government has accepted the meeting minutes.

3.2.3.1 Systems Engineering Technical Reviews (SETR)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct and participate in SETR events chaired and attended by the Government. The applicable SETR event will be IAW NAVAIRINST 4355.19D. The SETRs shall not be a place for problem solving, but to verify that problem solving has been accomplished. The SETR shall be event driven vice schedule driven and are scheduled when the required system baseline has achieved a level of maturity for the intended review. Any results from the SETR shall not eliminate the contractor's responsibility to meet contract requirements. Regardless of Government interaction in the design review process, the contractor shall maintain design responsibility for the system.

3.2.3.1.1 Kick-off Meeting

When required by the DO, the requirements of this paragraph shall apply. The contractor shall attend a government-scheduled one-day kick-off meeting at the Government's facility within 30 days of a DO agreement. The purpose of the kick-off meeting shall be to establish the framework of the contractor and Government interaction during the performance of the DO. The contractor's management leads, functional leads, technical leads and contractual personnel should be in attendance. At a minimum, the contractor shall present:

- a. Introduction and contract overview
- b. Discussion and clarification of Spec and SOW requirements
- c. Presentation of a complete, accurate, and realistic IMS and detailed schedule with status
- d. Identification of the critical paths within the IMS and detailed schedule
- e. CDRL delivery schedule and status
- f. Changes to SEMP, if applicable
- g. Changes to TEMP, if applicable
- h. Changes to CM Plan (to include Data Management) , if applicable
- i. Changes to SDP, if applicable
- j. Changes to RMP, if applicable
- k. Changes to OPSEC and IA implementation plans, if applicable
- l. Program life cycle model selection and rationale
- m. Action item reporting and status
- n. Long lead time item identification and status
- o. Contractor IPT structure (names, responsibilities, phone numbers, and email addresses)
- p. Monthly report content and format (Metrics collection process, analysis, and reporting)

3.2.3.1.1.1 Kick-off Meeting Entry/Exit Criteria

When required, entry and exit criteria will be identified within a DO.

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3.2.3.1.2 System Requirements Review-II-System Functional Review (SRR-II-SFR)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct a combined SRR-II-SFR. The SRR-II-SFR is a multi-disciplined product and process assessment to ensure that the system under review can proceed into preliminary design, and that the system functional requirements, including derived and decomposed requirements, are defined and consistent with program cost, schedule, risk, and other system constraints. The SRR-II-SFR shall assess the system functional requirements and ensure that the required system performance is fully defined and is traceable to the functional baseline described in the SOW and associated specification. At the SRR-II-SFR, the contractor shall:

- a. Identify and discuss program resource availability to support the schedule
- b. Present and discuss a schedule critical path
- c. Provide current status vs. critical path
- d. Describe implementation of the SDP
- e. Provide a hardware / software system organizational structure
- f. Show that the functional requirements are traceable to the system requirements
- g. Show that the explicit and derived requirements are quantified and documented
- h. Address the following applicable functional areas:
  - (1) T&E
  - (2) Logistics
  - (3) TD
  - (4) Facilities
  - (5) Interoperability
  - (6) IA
  - (7) Quality management
  - (8) CM
  - (9) Security
- i. Present the results of a comprehensive risk assessment for design, integration, and test

3.2.3.1.2.1 SRR-II-SFR Entry/Exit Criteria

When required, entry and exit criteria will be identified within a DO.

3.2.3.1.3 Preliminary Design Review

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct a PDR. The purpose of the PDR is for the Government to formally review the activities and work products generated by the contractor during the performance of the preliminary design stage in order to develop the allocated baseline, and to verify that the approach for the system design is ready to proceed into the detailed design phase. The contractor shall present and describe the proposed training system design and program status. The following items shall be topics of discussion and presentation at the PDR:

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- a. Training system hardware and software design, including:
  - (1) Instructor Operator Station (IOS)
  - (2) Trainee station
  - (3) Computational system
  - (4) Visual system
  - (5) Communication and audio systems
  - (6) Network
  - (7) Interoperability design and implementation
  - (8) Instructional system
  - (9) Software tools
  - (10) Use of developmental and Commercial and Non-developmental (CaNDI) software and databases
  - (11) Trainer databases
  - (12) Software development files
  - (13) Hardware and software interfaces
  - (14) Design modularity and commonality
- b. Contractor facility and MIL planning
- c. Logistics design aspects and concerns
- d. Item Unique Identification (IUID) marking of trainer and ISK
- e. T&E
- f. Security and IA, including systems security design, initial security risk assessment, security test approach, security training approach, and any other security and IA relevant information.
- g. Program problem and risk areas, recommended solutions, and evaluation of alternatives
- h. Updated RTVM

3.2.3.1.3.1 PDR Entry/Exit Criteria

When required, entry and exit criteria will be identified within a DO.

3.2.3.1.4 Critical Design Review

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct a CDR. The purpose of the CDR is for the Government to formally review the activities and work products generated by the contractor during the performance of the critical design stage in order to develop the product baseline, and to verify that the system is ready to proceed into the hardware-software coding, assembly, and integration phase. The contractor shall present and describe the finalized training system design and program status, and address the design changes made since the PDR. The following items shall be topics of discussion and presentation at the CDR:

- a. Training system hardware and software design, including:
  - (1) IOS
  - (2) Trainee station
  - (3) Computational system

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- (4) Visual system
- (5) Communication and audio systems
- (6) Network
- (7) Interoperability design and implementation
- (8) Instructional system
- (9) Software tools
- (10) Use of developmental and CaNDI software and databases
- (11) Trainer databases
- (12) Software development files
- (13) Hardware and software interfaces
- (14) Design modularity and commonality
- b. Contractor facility and MIL planning
- c. Logistics design aspects and concerns
- d. IUID marking of trainer equipment and ISK
- e. Parts management program status
- f. T&E
- g. Security and IA, including updates to the systems security design, security risk assessment, security test approach, security training approach, and any other security and IA relevant information.
- h. Program problem and risk areas, recommended solutions, and evaluation of alternatives
- i. Updated RTVM

3.2.3.1.4.1 CDR Entry / Exit Criteria

When required, entry and exit criteria will be identified within a DO.

3.2.3.2 IPT Meetings

When required by the DO, the requirements of this paragraph shall apply. The contractor shall attend and participate in IPT meetings to be conducted throughout the entire contract. IPT meetings shall provide a forum suitable for maintaining a continuous interchange of ideas, issues, and to identify and resolve potential problem areas. Upon request, the contractor shall document the agenda and conference minutes IAW CDRL B003.

3.2.3.3 In-Process Reviews (IPR)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall conduct IPRs as required. IPRs shall provide attendees with information regarding the status and planned activities of the program. IPRs shall include the following:

- a. A presentation on the status of the overall program, including the training system design (hardware and software), CM, testing, and production
- b. Review of the integrated logistics support program
- c. Review of software status
- d. Review of Failure Reporting, Analysis, and Corrective Action System data, when applicable



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- e. Review of the program schedule status
- f. Review of program risks
- g. Review of updated RTVM

3.2.3.4 Technical Documentation (TD) Reviews

When required by the DO, the requirements of this paragraph shall apply. The contractor shall hold and participate in TD Reviews, at approximately the 40 percent and 80 percent completion points of the deliverable TD. The TD shall be created IAW the CDRL. The contractor shall prepare the agenda and minutes. The contractor shall meet 40% and 80% entry and exit criteria per the DOs.

3.2.3.5 Production Readiness Review (PRR)

When required by the DO, the requirements of this paragraph shall apply. The purpose of the PRR is to determine whether the production hardware and software are ready for efficient and economical production. The contractor shall discuss the manufacturing and T&E (Production Testing) program during the PRR. The contractor shall demonstrate that production engineering challenges are resolved, production processes and process controls are in place, parts and materials are on hand, and testing methods are provided.

3.2.4 Commercial and Non-Developmental Items (CaNDI)

When required by the DO, the requirements of this paragraph shall apply. The contractor shall fulfill the requirements of the contract through acquisition of CaNDI to the maximum extent practicable. CaNDI proposed by the contractor will be reviewed by the Government to determine whether each proposed CaNDI component is, in fact, CaNDI. The Government will also determine the extent to which the proposed CaNDI is practicable for off-the-shelf use within the Government's logistical environment.

3.2.4.1 Parts Management

When required by the DO, the requirements of this paragraph shall apply. The contractor shall establish a parts management system, IAW the contractor's standard procedures, that ensures that the training system meets the performance requirements specified in the associated specification with the lowest life cycle cost.

3.2.5 System Safety Tasks

When required by the DO, the requirements of this paragraph shall apply. The contractor shall ensure that the training system meets applicable safety requirements. The contractor shall include system safety as a topic of discussion during the scheduled program reviews.

3.2.6 Product Assurance Audits and Inspections

The Government may perform audits and inspections of contractor conformance to contractual requirements at any time during the performance of the contract. The contractor shall make non-deliverable documentation and data available to the Government during these audits and inspections. The Government will provide reasonable notice to the contractor prior to conducting audits and inspections.

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3.2.7 System Test and Evaluation

When required by the DO, the requirements of this paragraph shall apply. The contractor shall plan, coordinate, establish, and implement a T&E program designed to verify that the trainer and the integration of all subsystems and equipment meet the technical and operational requirements as stated in the DO. The testing events shall be designated as DT events. The test phases are designated as DT-1 (NPE) through DT-5 (GFI). The contractor shall attend and participate in the T&E IPT meetings. T&E IPT will be the forum for discussion, coordination, and resolution of test planning goals, strategy, and issues.

3.2.7.1 Responsibility for Tests

Unless otherwise specified herein, the contractor shall perform the specified test and inspections. The Government reserves the right to perform tests and inspections that are deemed necessary to ensure that delivered supplies and services conform to the contract requirements.

3.2.7.2 Test Authority

When required by the DO, the requirements of this paragraph shall apply. The contractor shall record the test results during contractor's inspections. A Procuring Contracting Officer's (PCO's) representative will certify the contractor's test results. A PCO's representative will record the Government's inspection and test results.

3.2.7.3 T&E Program Planning

When required by the DO, the requirements of this paragraph shall apply. The contractor, working with the T&E IPT, shall develop and document the structure and objectives of the trainer T&E program. The contractor shall continuously reassess and refine the T&E program as trainer development, production, and testing progresses. The contractor shall update the Test & Evaluation Master Plan (TEMP) throughout the basic contract to reflect changes in T&E concepts, test responsibilities, mission and systems descriptions, ground rules, documentation, and resource requirements.

3.2.7.4 Test Resources and Facilities

When required by the DO, the requirements of this paragraph shall apply. During early DO product development of subcomponents, the contractor shall furnish, or schedule the use of, the inspection and testing facilities, equipment, and personnel required to ensure that the training system components are mature enough to move onto the next phase of testing, and meet the requirements of the DO. The contractor shall ensure that the contractor personnel, test equipment, test facilities, other supporting equipment, spare assemblies and parts, test and data logs, and other items necessary for testing are available for the start and during the required testing events. Once the contractor is ready to begin integration of the software/hardware components, the contractor shall coordinate with the Government the use of an Engineering Production Model (EPM) as a development and testing resource in preparation for final acceptance. EPM integration may begin any time after the first DT-1, but no later than DT-3. The contractor shall be responsible for the configuration management of the EPM to ensure it is in compliance with the requirements of the DO and can be reconfigured to support other DO products, as needed.

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3.2.7.5 Test Methods

When required by the DO, the requirements of this paragraph shall apply. Tests shall be performed IAW the Government-accepted Test Procedure (TP), CDRL A001. Test, examination, demonstration, inspection, and verification procedures shall be documented in the TP and shall be written so that a qualified technician can perform the tests. The TP shall include the tests, examinations, demonstrations, inspections, and verifications for all products specified in the delivery order. Test results shall be documented in the Test/Inspection Report. The contractor shall prepare the TP and the Test/Inspection Report IAW CDRLs A002 and A001, respectively.

3.2.7.6 Test Criteria

When required by the DO, the requirements of this paragraph shall apply. The test criteria for tests and examinations shall include both quantitative and qualitative performance data of the operational system(s). Quantitative test criteria shall be used to the maximum extent possible. Qualitative data such as video, photographs, and tape recordings, obtained from operational system or subsystem performance, may be used as test criteria whenever quantitative test criteria is not practical or is not measurable, and the requirement for simulation or stimulation realism can only be judged qualitatively. Government approval is required for test criteria that are not based on actual operational system performance data. Where appropriate, test criteria for individual inspections, analyses, demonstrations, and tests shall consist of both quantitative and qualitative test criteria. As a complement to quantitative test results, qualitative comparisons of visual, video, and aural presentations shall be provided.

3.2.7.7 Tolerance Data

When required by the DO, the requirements of this paragraph shall apply. Test tolerances shall be identified for the test criteria when appropriate. Specified tolerances shall be derived from the trainer specification, design criteria reports, manufacturing criteria, and operational equipment data.

3.2.7.8 Alignment

When required by the DO, the contractor shall perform the necessary equipment alignments prior to the initiation of each increment of the T&E program.

3.2.7.9 Test Log

When required by the DO, the requirements of this paragraph shall apply. The contractor shall maintain a log of subsystem and system tests conducted in-plant and on-site. Entries into the test log shall begin with the start of contractor and subcontractor engineering verification testing and shall continue until the completion of testing. The test log shall show (by date) equipment adjustments, modifications, failures, removal, replacements, and scheduled and unscheduled maintenance. The contractor shall make the test log available to the Government technical representative upon request.

3.2.7.10 Changes During Testing

When required by the DO, the requirements of this paragraph shall apply. Changes made in the alignment, programming, or adjustments during the T&E program, shall be recorded in the

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contractor's test log. Tests conducted prior to such changes shall be repeated, unless a Government technical representative determines that such changes have not invalidated the related test data.

3.2.7.10.1 Software Changes During Government Testing

When required by the DO, the requirements of this paragraph shall apply. Changes to software baselines during test events shall require Government authorization. The Government will maintain configuration control of software baselines used during Government testing. Prior to the initiation of each DT after DT-1, the contractor shall ensure the Government software repositories located in the MIL are updated with the current test build software. Any software changes developed in response to deficiencies encountered during the test event shall be integrated into the contractor's and MIL repositories, and the software baseline appropriately rebuilt. Partial builds are acceptable as long as they are demonstrated to only affect the software executable in question, and no other executables are impacted. The contractor shall demonstrate to the Government that proposed software baseline changes are supported by contractor regression testing.

3.2.7.11 Changes After Testing

When required by the DO, the requirements of this paragraph shall apply. Modifications or changes in design, which are determined to be necessary as a result of testing, shall be recorded in the contractor's test log. Tests run prior to such modifications shall be repeated unless a Government technical representative determines that such changes have not invalidated the related test data.

3.2.7.12 T&E Deficiency Reporting System

When required by the DO, the requirements of this paragraph shall apply. The contractor shall implement a deficiency reporting system for tracking (identification, assignment, status, progress, resolution) hardware and software problems (including tactical subsystem) discovered during the DT events. In addition, the deficiency reporting system shall be used to track documentation problems including technical documentation and data errors. During Hardware-Software Integration (HSI) and early DT, the contractor shall utilize a Software/System Trouble Reports (STRs) system. The contractor's defined STR process is acceptable for deficiency reporting during HSI. The contractor shall provide the Government their definition for deficiencies, categories and priorities, and allow the Government to participate and have access to the contractor's STR tracking system. As the training system matures to system level DT-3, Government Deficiency Reports (DRs) shall be recorded, assessed for impact, and prioritized.

3.2.7.13 T&E Program Components

When required by the DO, the requirements of this paragraph shall apply. The T&E program shall consist of test phases described below and in the TEMP. Test phases will be structured by the T&E IPT to provide the DT required to support the verification of requirements. The T&E program shall consist of the following components:

- a. DT-1 (Navy Preliminary Evaluations (NPE))
- b. DT-2 (Contractor Preliminary Inspection (CPI))
- c. TRR-1

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- d. DT-3 (GPI)
- e. DT-4 (Contractor Final Inspection (CFI))
- f. TRR-2
- g. DT-5 (Government Final Inspection (GFI))
- h. Physical Configuration Audit (PCA)
  - (1) Preliminary PCA
  - (2) Final PCA

3.2.7.13.1 DT-1 (Navy Preliminary Evaluation)

When required by the DO, the requirements of this paragraph shall apply. Government SMEs and engineers will perform preliminary evaluations during the development of the product to ensure early identification of major problem areas. DT-1 (NPE) shall occur in-plant after hardware assembly. In the case of a software development / update only DO, DT-1 shall be conducted with a review of software demonstrations by the contractor to the Government using contractor facilities and resources. In a software only DO, DT-1 events are to ensure the software is ready to be integrated on an EPM at the MIL. When the DO requires full trainer development, DT-1 (NPE) shall occur when sufficient controls and displays are operational to evaluate trainer characteristics, to determine the training potential, and to determine if there are gross deficiencies of the fidelity of the trainer. The contractor shall provide operational support for test procedures established by the Government test team. Full systems operation is not required but special recording instrumentation that may not be a part of the normal trainer configuration shall be available for use during DT-1 (NPE). The contractor shall provide support for test procedures established by the Government test team. Tests conducted shall include the trainer characteristics tests specified herein. When needed, additional DT-1 (NPE) phases (i.e., DT-1a, DT-1b, and so on) shall be scheduled for the purposes of evaluating changes made to correct problem areas and to assess progress with the integration of major trainer subsystems. The timing, duration, and number of DT-1 (NPE) phases shall be coordinated between the contractor and Government test team as part of the T&E IPT meetings.

3.2.7.13.2 DT-2 (Contractor Preliminary Inspection) (Full Trainer Development only)

When required by the DO, the requirements of this paragraph shall apply. DT-2 is only required when a new trainer is being developed by the contractor and trainer hardware is being staged at the contractor's facility. The contractor shall perform DT-2 (CPI) in-plant IAW the Government-accepted TP and other Government-accepted test plans as documented in the TEMP. A PCO representative may witness the performance of DT-2 (CPI). The contractor shall document that the test procedures have been run start-to-finish as a complete test, without segregation of elements of individual tests, prior to TRR-1. The contractor shall annotate in the TP, procedural changes made as a result of DT-2 (CPI) and shall provide a copy of the annotated TP to the Government prior to the start of DT-3 (GPI). The contractor shall document the DT-2 (CPI) results in the Test/Inspection Report. The contractor shall record tests results that do not comply with specification requirements as deficiencies. The contractor shall correct the deficiencies found during DT-2 (CPI) prior to the commencement of DT-3 (GPI). The documented DT-2 (CPI) results, including open deficiencies, shall be presented to the Government on an incremental basis at the next scheduled T&E IPT meeting and in final total form at the TRR-1.

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3.2.7.13.3 Test Readiness Review-1(Full Trainer Development only)

When required by the DO, the requirements of this paragraph shall apply. TRR-1 is only required when a new trainer is being developed by the contractor and trainer hardware is being staged at the contractor's facility. TRR-1 will be conducted by the Government, following completion of DT-2 (CPI) and after the TRR entry criteria specified in the DO. The purpose of the TRR-1 is to determine trainer readiness for DT-3 (GPI). The contractor shall provide the resources, including facilities, equipment, and personnel to support the TRR-1. The TRR-1 will include a review of the T&E program, including the test results, presentation of contractor certification of test readiness, and open deficiencies remaining from DT-2 (CPI). The contractor shall present the RTVM, in contractor's format, to verify that the DO requirements have been tested. The TRR-1 shall include a contractor-conducted, Government-witnessed demonstration of trainer stability for testing. The trainer stability demonstration shall consist of the performance of a stress test IAW the verification requirements of the DO. The TRR-1 will be repeated until the trainer has been determined by the Government to be acceptable for commencement of the Conformance Inspections. TRR-1 will be considered complete when all DRs are resolved and an acceptable level of program risk is ascertained. During TRR-1, the following shall be reviewed and discussed:

- a. Trainer test procedures
- b. Updated RTVM to verify specification requirements have been tested
- c. Recorded R&M data
- d. The contractor's test log
- e. DT-2 (CPI) test results (including Software Items (SI) test results) and deficiencies when applicable
- f. Test discrepancy reporting process and applicable test discrepancy report form to be used during DT-3 (GPI).
- g. Identification of software test tools to be used during DT-3 (GPI)
- h. Summary of software problems status
- i. Courseware
- j. Status of spare capacities, such as CPU (timing), memory capacity, and disk storage
- k. Cold start procedures
- l. Mission exercises
- m. Logistic Support

3.2.7.13.3.1 TRR-1 Entry/Exit Criteria

When required, entry and exit criteria will be identified within a DO.

3.2.7.13.3.1.1 DT-3 (Government Preliminary Inspection)

3.2.7.13.3.1.1.1 DT-3 (Full Trainer Development)

When required by the DO, the requirements of this paragraph shall apply. DT-3 (GPI) will commence upon notification by the representative of the PCO that the exit criteria for TRR-1 have been met. DT-3 (GPI) will be conducted in-plant by the Government test team as defined in the TEMP. DT-3 (GPI) will consist of Government-conducted tests to demonstrate

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compliance with the specified performance requirements. DT-3 (GPI) will be conducted IAW the Government-accepted TP (revised to include corrections made during DT-2 (CPI)) and other Government-accepted test plans as documented in the TEMP. The contractor shall provide the Government with a copy of the revised TP prior to DT-3 (GPI). The Government reserves the right to perform additional tests to ensure compliance with the specified requirements. Testing will commence with the establishment of a software baseline resulting from a software cold-start performed IAW the cold start requirements specified in this SOW, the verification requirements of the DO, and the Government-accepted TP. Following the cold-start, the Government will perform the IA verifications IAW the verification requirements of the DO, and the Government-accepted TP. Deficiency correction verification and validation, including additional cold-starts, will be at the discretion of the Government test team. The typical test schedule may consist of a 10-hour test day followed by the contractor's deficiency clean-up and trainer maintenance periods. The contractor shall provide the resources, personnel, equipment, and facilities needed to support the tests. Hardware and software configuration item testing and design documentation verification and validation will be conducted as an integral part of DT-3 (GPI). Deficiencies found during these tests shall be corrected by the contractor and verified by the Government test team prior to shipment of the trainer to the installation site, unless otherwise authorized by the Government test director. Authorization to ship the trainer to the installation site will be contingent upon notification by the representative of the PCO that the DT-3 (GPI) exit criteria specified below have been met.

3.2.7.13.3.1.1.2      DT-3 (Software Development Only)

When required by the DO, the requirements of this paragraph shall apply. The purpose of DT-3 in a software only DO is to ensure that the software components have been successfully installed in the MIL and a fully integrated test environment has been established to continue product development. The contractor shall be responsible for scheduling one of the EPMs and integrating the software components in preparation for the DT-3 testing event. The contractor shall be responsible for, with Government approval, resolving any conflicts in scheduling of the MIL that arise. All the terms of paragraph 3.2.7.13.3.1.1.1 apply with the exception of any reference to in-plant or shipping of the trainer to site.

3.2.7.13.3.1.1.3      DT-3 (GPI) Exit Criteria

The exit criteria for DT-3 (GPI) shall consist of Government concurrence with the following:

- a. Cold start has been successfully performed to establish the trainer's software baseline configuration to be used for testing.
- b. TP tests have been executed and accepted.
- c. A complete TP test or acceptable regression test series representative of the complete TP (as determined by the Government) has been run after the final DR ready for re-test. TP tests may be reduced within acceptable regression testing guidelines determined by the Government.
- d. Updated tests results have been recorded in the contractual test documentation, including date/time of final results and red-lines (when necessary).
- e. Deficiencies have been documented, categorized for severity, and tracked to final resolution.
- f. DT-3 (GPI) has demonstrated that test equipment needed to execute the complete TP has been used, functions properly, and is currently available, calibrated, and working.

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g. CM baseline (software and hardware) has been maintained throughout DR correction. CM deficiencies identified during DT-3 (GPI) have been corrected.

3.2.7.13.3.1.2 DT-4 (Contractor Final Inspection)

3.2.7.13.3.1.2.1 DT-4 (DFI) (Full Trainer Development)

When required by the DO, the requirements of this paragraph shall apply. Upon completion of the installation of the trainer on-site, the contractor shall perform DT-4 (CFI) IAW the Government-accepted TP and other Government-accepted test plans as documented in the TEMP. A PCO representative may witness the performance of DT-4 (CFI). DT-4 (CFI) shall include a complete run of the Government-accepted TP from start to finish. The contractor shall document that the test procedures have been run start-to-finish as a complete test, without segregation of elements of individual tests, prior to TRR-2. The contractor shall annotate in the TP, procedural changes made as a result of DT-4 (CFI) and shall provide a copy of the annotated TP to the Government prior to the start of DT-5 (GFI). The contractor shall document DT-4 (CFI) results in the Test/Inspection Report. The contractor shall record tests results that do not comply with specification requirements as deficiencies. The contractor shall correct the deficiencies found during DT-4 (CFI) prior to the commencement of DT-5 (GFI). The documented DT-4 (CFI) results, including open deficiencies, shall be presented to the Government on an incremental basis at the next scheduled T&E IPT meeting and in final total form at the TRR-2.

3.2.7.13.3.1.3 DT-4 (Contractor Final Inspection) (Software Development Only)

When required by the DO, the requirements of this paragraph shall apply. The purpose of DT-4 in a software development / upgrade only DO is to ensure that all software components have been successfully installed in the MIL in their final configuration and are tested against the approved test plans. The contractor shall be responsible for scheduling one of the EPMs and integrating the software components in preparation for the DT-4 testing event. The contractor shall be responsible for, with Government approval, resolving any conflicts in scheduling of the MIL that arise. All the terms of paragraph 3.2.7.13.3.1.2.1 apply with the exception of any reference to in-plant.

3.2.7.13.3.1.4 Test Readiness Review-2

When required by the DO, the requirements of this paragraph shall apply. TRR-2 will be conducted by the Government, following completion of DT-4 (CFI) and after the TRR-2 entry criteria specified below in 3.2.7.13.3.1.4.1 have been met. The purpose of the TRR-2 is to determine trainer readiness for DT-5 (GFI) and shall occur either in the MIL or on site with the delivered training system. The TRR-2 will include a review of the T&E program, including the test results, presentation of contractor certification of test readiness, and open deficiencies remaining from DT-4 (CFI). The contractor shall present a cross-reference matrix, in contractor's format, to verify that the specification requirements have been tested. The TRR-2 shall include a contractor-conducted, Government-witnessed demonstration of trainer stability for testing. The trainer stability demonstration shall consist of the performance of a stress test IAW the DO. The TRR-2 will be repeated until the trainer has been determined by the Government to be acceptable for commencement of DT-5 (GFI). TRR-2 will be considered



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complete when all DRs are resolved and an acceptable level of program risk is ascertained. During the TRR-2, the following shall be reviewed and discussed:

- a. Trainer test procedures
- b. Updated RTVM to verify specification requirements have been tested
- c. Recorded R&M data
- d. The contractor's test log
- e. DT-4 (CFI) test results (including SI test results) and deficiencies
- f. Test discrepancy reporting process and applicable test discrepancy report form to be used during DT-5 (GFI).
- g. Identification of software test tools to be used during DT-5 (GFI)
- h. Summary of software problems status
- i. Courseware
- j. Status of spare capacities, such as CPU (timing), memory capacity, and disk storage
- k. Cold start procedures
- l. Mission exercises
- m. Logistic Support

3.2.7.13.3.1.4.1 TRR-2 Entry / Exit Criteria

When required, entry and exit criteria will be identified within a DO.

3.2.7.13.3.1.5 DT-5 (Government Final Inspection)

When required by the DO, the requirements of this paragraph shall apply. DT-5 (GFI) will commence upon notification by the representative of the PCO that the TRR-2 exit criteria have been met. DT-5 (GFI) will be conducted on-site by a Government test team as defined in the TEMP and will consist of tests conducted to verify compliance with the specified performance requirements. DT-5 (GFI) will be conducted IAW the Government-accepted TP (revised to include corrections made during DT-2 (CPI), DT-3 (GPI), and DT-4 (CFI)) and other Government-accepted test plans as documented in the TEMP. The contractor shall provide the Government with a copy of this revised TP prior to DT-5 (GFI). Testing will commence with the establishment of a software baseline resulting from a software cold-start performed IAW the cold start requirements specified in this SOW, the verification of requirements, and the Government-accepted TP. Following the cold-start, the Government will perform the IA verifications IAW the IAMP, and the Government-accepted TP. Deficiency correction verification and validation, including additional cold-starts, will be at the discretion of the Government. The typical test schedule may consist of a 10-hour test day followed by the contractor's deficiency clean-up and trainer maintenance periods. The contractor shall provide the resources, personnel, and equipment necessary to support the tests. Hardware and software configuration item testing and design documentation verification and validation will be conducted as an integral part of DT-5 (GFI). The Government reserves the right to perform such additional tests as deemed necessary to ensure compliance with the specified requirements. Deficiencies found during DT-5 (GFI) shall be corrected by the contractor and verified by the Government test team prior to Government acceptance of the trainer.

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3.2.7.13.3.1.5.1      DT-5 (GFI) Exit Criteria

The exit criteria for DT-5 (GFI) shall consist of Government concurrence with the following:

- a. A cold-start has been successfully performed to establish final software baseline.
- b. Deficiencies identified have been documented, categorized for severity, and tracked to final resolution.
- c. A complete TP test has been run after the final DR ready for re-test, within acceptable regression testing guidelines as determined by the Government.
- d. A copy of the final TP test results has been provided with the results recorded in the contractual testing documentation, including date/time of final results, and red-lines (when necessary).
- e. CM baseline (software and hardware) has been maintained throughout DR correction. CM deficiencies identified during DT-5 (GFI) have been corrected.
- f. DT-5 (GFI) has demonstrated that the test and support equipment necessary to execute the complete TP testing were used, documented, in calibration, and functioned properly.
- g. Required QA standards have been satisfied and achieved.
- h. The contractor's QA representative, contractor's test manager, and Government's test director have resolved testing as complete.

3.2.7.13.3.2      Physical Configuration Audit

When required by the DO, the requirements of this paragraph shall apply. The PCA is a SETR event and will consist of non-functional examinations performed IAW the Government-accepted TP to demonstrate that the trainer as-built design satisfies the specification requirements, and that the deliverable hardware and software documentation accurately reflect the configuration items. The contractor shall perform a planning effort for the PCA and document the results in the TEMP. The contractor shall develop and document in the TP, the test procedures to perform the PCA examinations. The contractor shall record the results of the PCA examinations in the Test/Inspection Report. Non-deliverable documents may be in contractor format and will be examined only to determine contractor compliance with CM requirements. The PCA will be conducted by a Government team on the as-built trainer with power off. When required by the DO, the contractor shall be responsible for the disassembly of trainer equipment and for providing access to areas of the trainer not normally accessible. The Government reserves the right to perform other examinations deemed necessary to determine compliance with design documentation requirements. The contractor shall prepare the Configuration Audit Summary Report IAW the CDRL. The PCA will consist of the following phases.

3.2.7.13.3.2.1      Preliminary PCA

The preliminary PCA will be conducted in-plant during DT-3 (GPI) and is only required for development of a new training system. This phase of the PCA will consist of hardware examinations of the as-built trainer as defined in the Government-accepted TP and other Government-accepted test plans, as documented in the TEMP. Deficiencies will be recorded by the Government team and shall be corrected by the contractor prior to commencement of DT-4 (CFI). A typical day may consist of 10 hours of Government team examinations followed by the contractor's deficiency correction period. The preliminary PCA will be considered complete when all DRs are resolved and an acceptable level of program risk is ascertained.

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3.2.7.13.3.2.1.1 Preliminary PCA Entry / Exit Criteria

When required, entry /exit criteria will be identified within a DO.

3.2.7.13.3.2.2 Final PCA

The final PCA will commence upon successful completion of the FCA in order to establish the product baseline prior to trainer acceptance, as indicated by a signed DD-250. This phase of the PCA will consist of software and hardware examinations defined in selected sections of the Government-accepted TP, as documented in the TEMP. The hardware PCA will consist of an examination of the as-built trainer against its design documentation and the software PCA will consist of an examination of the as-built version of the computer system configuration items against the software technical documentation. Deficiencies recorded by the Government shall be corrected by the contractor prior to the signing of the DD-250. The final PCA will be considered complete when all DRs are resolved and an acceptable level of program risk is ascertained.

3.2.7.13.3.2.2.1 Final PCA Entry / Exit Criteria

When required, entry /exit criteria will be identified within a DO.

3.2.8 IUID Assignment

When required by the DO, the contractor shall assign an IUID to the training system and a separate IUID to its associated Initial Support Kit (ISK), in accordance with DFARS Clause 252.211-7003.

3.3 Specific Tasks

This section describes the specific types of delivery orders that will be issued against this SOW. Unless otherwise specified in the DO or below subsection, all terms in sections 3.1 and 3.2 apply.

3.3.1 CLIN 0001 Post Award Conference (PAC) / Administrative Requirements

3.3.1.1 Post Award Conference (PAC)

The contractor shall attend a government-scheduled a one-day PAC at the Government's facility within 30 days of CLIN 0001 DO award. The purpose of the PAC shall be to establish the framework of the contractor and Government interaction during the performance period of the contract. The contractor's management leads, functional leads, technical leads and contractual personnel should be in attendance. At a minimum, the contractor shall present:

- q. Contractor IPT structure (names, responsibilities, phone numbers, and email addresses)
- r. Monthly report content and format (Metrics collection process, analysis, and reporting)

3.3.1.2 Administrative Requirements

Within 30 days of CLIN 0001 DO award, the contractor shall submit the following IAW the applicable CDRLs:

- a. OPSEC implementation plan
- b. IA implementation plan

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- c. SEMP
- d. CM Plan (to include Data Management)
- e. SDP
- f. TEMP
- g. QAMP (to include Software QA)
- h. RMP

Hardware and software DOs will not be issued until the items above have been reviewed and accepted by the Government.

3.3.2 CLIN 0002 Core Sustainment (Firm Fixed Price(FFP))

3.3.2.1 MRTS Integration Laboratory (MIL)

The contractor shall operate and maintain the MIL, to include providing System Administration (SA) and Information Assurance (IA) services to sustain the MIL. Currently, MRTS assets are located at two government facilities within 2 miles of Naval Support Activity (NSA) OrRlando. The MIL consists of two MRTS training devices configured in accordance with Device 21H45 specifications, one 21E17 device, a separate network connected to the DREN for Government configuration management of the training system software, and associated spares. Each training device is considered an Engineering Production Model (EPM). The three training systems are for use in testing by the Government and are available for use by the contractor for testing purposes under terms of DO's written against sections 3.3.3, 3.3.4, 3.3.5, and 3.3.6 of this SOW. The contractors SEMP, SDP, CMP, and TEMP shall address the MIL in development efforts.

The hardware configuration and parts list of the MIL are listed in the Appendix. The contractor shall be responsible for the following actions:

- a) Cleaning and maintenance of the hardware components of the MIL performed in accordance with the applicable development stations' COTS manual or EPM Systems Interface Manual (SIM).
- b) System administration functions to support up to fifteen government computer systems, one primary configuration management server(s), and backup servers.
- c) Maintain on- and off-site backups of all software and documentation.
- d) The contractor shall be responsible for troubleshooting, identifying and replacing failed components in the MIL. Replacement items and spare parts will be replenished by the Government.
- e) Maintain an inventory of all components in the MIL, including spares.
- f) System administration functions to keep the EPM's in compliance with the products developed under other sections of this SOW. This may require multiple baselines of operating system configurations (or images) to support multiple projects in different phases of development.

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- g) IA functions to ensure the MIL is in accordance with security requirements listed in section 3.1.4.
- h) Maintaining EPM use, operation, demonstration, and maintenance schedule. Note: the Government Configuration Control Review Board (CCRB) will have final authority for prioritizing access to the EPMs.
- i) The contractor shall provide telephonic or electronic (email, web meeting, etc.) software trouble support. Technical assistance and response to technical questions concerning the MRTS trainers. Approximately 8 hours of assistance shall be provided per month and support shall be provided between the hours of 0800 and 1700 (Eastern Standard Time).

### 3.3.2.2 Information Assurance (IA)

The Contractor shall safeguard all unclassified Government proprietary information throughout the life of the contract and shall ensure that software applications delivered to the Government are free from elements that might be detrimental to the secure operation of the resource operating system. Unless otherwise specified in the DO, all requirements of sections 3.1.4 shall apply. The following roles shall be required to support the MIL.

- a. The Contractor shall provide a certified IA Technical (IAT) Level I personnel to perform duties of a System Administrator as required in DoD 8570.01-M/Appendix 3 for the MIL. Certifications shall be made available for government verification.
- b. The Contractor shall provide a certified IAT Level I personnel to perform duties of an Information Assurance Officer (IAO) as required in DoD 8570.01-M/Appendix 3 for the MIL. Certifications shall be made available for government verification.

### 3.3.2.2.1 Backup Management System

The Contractor shall incorporate a backup management system and associated procedures for the MIL. The backup management system shall enable the System Administrator to perform weekly back up operations to an offsite location. The backup management system shall be approved by the CCRB prior to implementation. The contractor shall prepare Scientific and Technical Reports (Information Assurance System Administrator Guide (SAG)) IAW CDRL A00H.

### 3.3.2.3 Reporting

Status of the MIL shall be reported in accordance with the Contractor's Progress, Status, and Management Report, CDRL B001. Issues requiring immediate action shall be reported to the government TPOC immediately.

### 3.3.3 CLIN 0003 Software Development Products (Firm Fixed Price (FFP))

The contractor shall develop software products IAW the DO SOW. Unless otherwise specified in the DO, all development shall conform to requirements listed in sections 3.1 and 3.2, and in accordance with the contractor's approved SEMP, SDP, TEMP, CMP, OPSEC, and IAP.

The FFP CLIN shall be used in regular development products where the requirements are relatively stable at DO initiation. Consideration will be provided by the Government in these

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situations for requirements changes and scope increase. The contractor shall prepare ECP's for submission to the Government in accordance with CDRL A00A. The contractor shall provide monthly reports per CDRL B001.

**3.3.4 CLIN 0004 Software Development Products (Cost Plus Fixed Fee (CPFF))**

The contractor shall develop software products IAW the DO SOW. Unless otherwise specified in the DO, all development shall conform to requirements listed in sections 3.1 and 3.2, and in accordance with the contractor's approved SEMP, SDP, TEMP, CMP, OPSEC, and IAP.

The CPFF CLIN shall be used in high risk development products where the requirements are relatively dynamic at DO initiation. Consideration will be provided by the Government in these situations for requirements changes and scope increase. The contractor shall provide monthly reports per CDRL B001.

**3.3.4.1.1 Backup Management System**

The Contractor shall conduct weekly backups of work in development associated with a DO. The dates of completed backups shall be reported in the monthly report.

**3.3.5 CLIN 0005 Software Upgrade Products (Firm Fixed Price (FFP))**

The contractor shall develop software products IAW the DO SOW. Unless otherwise specified in the DO, all development shall conform to requirements listed in sections 3.1 and 3.2, and in accordance with the contractor's approved SEMP, SDP, TEMP, CMP, OPSEC, and IAP.

A software upgrade shall be considered a modification to an existing MRTS product baseline, smaller in scope than a full software development product. Another case where this type of DO will be issued is when the upgrade can be added to an existing trainer baseline without impacting the overall architecture of the training system, such as IA controls, reducing the effort.

**3.3.6 CLIN 0006 Hardware System Development and Technical Refresh (Firm Fixed Price (FFP))**

The contractor shall develop a hardware solution to meet the requirements of the DO SOW. Unless otherwise specified in the DO, all development shall conform to requirements listed in sections 3.1 and 3.2, and in accordance with the contractor's approved SEMP, SDP, TEMP, CMP, OPSEC, and IAP.

When required by a DO, the contractor will design a new MRTS training device hardware or perform technical refresh of existing MRTS training device hardware. Unless otherwise specified in the DO, the contractor shall be responsible for:

- a. Designing the new hardware configuration.
- b. Ensuring the new hardware configuration is compatible with existing MRTS software applications as specified in the DO.
- c. Purchasing of the equipment
- d. Installation of the equipment at all training sites and the MIL.

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- e. Scheduling of the MIL and trainer resources for use in establishing the new hardware baseline.

One of the EPM's in the MIL shall be used to test hardware changes. Once approved by the MRTS Configuration Control Review Board (CCRB), the changes will be fielded to the rest of the sites as specified in the DO.

**3.3.6.1 Initial Support Kit List (ISKL)**

When required by the DO, the requirements of this paragraph shall apply. When hardware is delivered to a site, an Initial Support Kit List (ISKL) must be delivered per CDRL C001 requirements of the contract. As part of hardware device development the contractor shall propose the range and depth for the recommended spares. All elements shall be reviewed for reliability and criticality to mission and probable replacement lead-time to determine recommended quantities. The contractor shall demonstrate its approach to developing and populating the data elements of the ISKL. This demonstration shall include its representation of the top-down breakdown structure of all training system components reduced to the Lowest Replacement Unit (LRU) level of assembly. The contractor shall provide technical and provisioning representatives to collaborate in this effort. The contractor's ISKL portion shall not include maintenance support Tools and Test Equipment (T&TE) items.

**3.3.7 CLIN 0007 Documentation (FFP)**

When specified in the DO, MRTS documentation will be prepared and/or updated to document the changes of trainer product updates. DOs written on this CLIN will designate the product line the documentation is required to support. The contractor shall produce, update, verify or provide as applicable the following documents:

- a. Training Equipment Change Directives (TECDs)
- b. Equipment Inventory Record (EIR)
- c. Technical Change Instruction (TCI)
- d. Training System Installation Plan (TSIP)
- e. Systems Interface Manual (SIM) along with COTS documentation
- f. Training System Support Documents (TSSD)
- g. System drawings and other related documentation

**3.3.7.1 Technical Documentation Orientation Conference**

When required by the DO, the requirements of this paragraph shall apply. The purpose of the TDOC is to ensure that the Government and contractor have a clear understanding of an agreement to the contractual requirements for development of the technical documentation for operations and maintenance of the trainer, including installation, theory of operation, system operation, troubleshooting procedures, preventive maintenance, parts lists, instructor information, and drawings. The objectives of this conference may be met during normal IPT meetings.

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3.3.8 CLIN 0008 System Administration (SA) / Information Assurance (IA) (FFP)

When required by the DO, the contractor shall provide specific SA and IA services to the government to support the MRTS program. These will be discrete actions outside of the scope of Core Sustainment (section 3.3.2), Software Development Products (sections 3.3.3 and 3.3.4), Software Upgrade Products (section 3.3.5), and Hardware System Development (section 3.3.6) and will be issued at the programs discretion. An example of the type of work under this CLIN is certification and accreditation efforts, command and program inspections, and compliance with computer tasking orders (CTOs).